THE IRON TRADE REVIEW

Volume XLIX CLEVELAND, NOVEMBER 16, 1911 Number 20

Railroad Buying Stimulates the Market

Very Large Tonnage of Plates Ordered and Important Contracts Will Be Placed Soon—Limited Activity in Pig Iron

The stimulating effects of continued heavy buying by the railroads are being felt by many mills, especially those in the Pittsburgh district, where recent car orders are responsible for more than 80,000 tons of plates and much other material being contracted for. In spite of the encouraging signs, it is not well to speak with too much enthusiasm of the improvement which has taken place. In the east, there is no change for the better and in some cases mill activities are not so great as they were a few weeks ago. Prices of finished materials generally continue low. An interesting development in steel-making in Cleveland is the announcement of the building of eight open-hearth furnaces by Corrigan, McKinney & Co., who now have two modern blast furnaces in that city.

Pig Iron

While pipe foundries in the eastern territory have bought a fair tonnage during the past week, the market in that section has been quiet. Although the pig iron situation is statistically stronger in the Philadelphia district, consumption of basic is proceeding at a slower rate than was expected when orders were placed. The principal topic of discussion has been the purchase of basic pig iron by the American Steel Foundries. Reports conflict as to the tonnage bought and price paid. It is generally agreed that about 10,000 tons were purchased for delivery at East St. Louis and Granite City, Ill. Positive statements have also been made that from 12,000 to 15,000 tons have been purchased for delivery to the Alliance plant of the company. Quotations on ferro-manganese and ferro-silicon show sharp advances.

Structural Material

Some contracts of good size have been awarded in structural material, but prices are still irregular. An eastern steel company has taken 1,500 tons for the Seamen's Institute, New York; the Passaic Steel Co., 1,100 tons for an apartment on Madison avenue, New York; Ravitch Bros., 800 tons for a building for the Carnegie Construction Co., New York; The American Bridge Co., 1,500 tons for the Otis Elevator building, New York. L. H. Focht, Reading, Pa., will erect a bridge across the Schuylkill, requiring 1,000 to 1,200 tons of steel bars; Snare & Treist will erect a bridge across the Passaic, requiring 1,000 tons of shapes. The Bethlehem Steel Co. will furnish 1,500 tons of plain material for the Heard building, Jacksonville, Fla.

Railroad Buying

Buying by railroads continues to be the most encouraging feature of the market. The New York Central lines continue the leading buyers and have just placed orders for 5,350 cars of assorted types with the American Car & Foundry Co., 2,000 box cars with the Pullman Co., 500 flat cars with Barney & Smith Co., and 350 gondolas with the Standard Steel Car Co., making a total of 12,350 cars recently placed by this system. The Southern Railway Co. has contracted for 1,700 all-steel gondolas, 500 steel underframe box cars, and 250 all-steel 50-ton flat cars. The Buffalo, Rochester & Pittsburgh has awarded 1,000 steel underframes to the Pressed Steel Car Co. The Cambria Steel Co. has been awarded 300 hoppers by the Cambria & Indiana, and 200 tank cars by the Sun Oil Co. The B. & O. Railroad Co. has practically closed for 4,500 gondolas and box cars and is understood to be considering the purchase of 4,500 additional cars. The present prospect is that the rail requirements in various lines will be heavy. It is expected that the Pennsylvania will order 250,000 tons, an increase of 100,000 tons over this year. The Colorado Fuel & Iron Co. has been awarded 30,000 tons of open-hearth rails by the Burlington, which placed 20,000 tons with the Illinois Central last week. The Philadelphia & Reading and the Central of New Jersey have covered for only a part of their requirements for 1912, dividing 15,000 to 20,000 tons between the Pennsylvania Steel Co. and the Bethlehem Steel Co. The recent order of 25,000 tons for the Norfolk & Western has been divided among the Carnegie Steel Co., which gets 12,000 tons, and the Maryland and Cambria Steel companies. The Atlantic Coast Line has placed 19,000 tons of rails, of which 12,000 goes to the Carnegie Steel Co., and 7,000 to the Maryland Steel Co. The Great Northern has ordered 40,000 tons and about 50,000 tons for southern roads are still pending. The Georgia railroad has given the Tennessee company 2,000 tons.

Plates

A leading car building company will soon be in the market for a large tonnage of plates to cover its requirements in building cars recently ordered. As high as 100,000 tons may be contracted for. The ship building companies of the east are well provided with orders to keep them busy for many months.

WORLD'S IRON MARKETS

PITTSBURGH

More Railroad Buying—Large Tonnage of Basic Bought.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Nov. 14.

The more cheerful tone noted in this market a week ago continues and has been followed by more general buying of freight cars and steel rails by the large transportation companies. Prospects for heavy buying on the part of the railroads are exceedingly bright. Following the awards by the New York Central system for 12,350 cars, it is announced today that the Baltimore & Ohio has practically closed for about 4,500 freight cars and is in the market for 4,500 additional cars. It is also stated that the Pennsylvania Railroad Co. will enter the market for cars in the very near future. Advance information is that the Pennsylvania, New York Central, Baltimore & Ohio and other roads will order much heavier rail tonnage than in 1910. One large company in the Pittsburgh district has booked upward of 75,000 tons of plates as a result of the recent car buying and reports a larger daily average of miscellaneous orders for plates and shapes than at any time in years.

It is expected that some action will be taken before the end of this week with regard to a revision downward of ore freight rates from the lower lake ports to the furnaces in the valley and Pittsburgh districts, and that this will be followed by greater activity in the pig iron market. The American Steel Foundries during the week closed for a large tonnage of basic pig iron for western shipment and the Westinghouse Air Brake Co. entered the market for 1,000 to 2,000 tons each of foundry and gray forge iron, for first quarter shipment.

Little encouragement is found in the price situation in the finished steel market. One sale of a round tonnage of steel bars was made at 1.05c, Pittsburgh, while a smaller lot was sold at 1c, Pittsburgh. The bulk of the trading, however, has been at 1.10c to 1.15c. Concessions are still being made on structural steel and plates, although quotations on sheets, pipe and wire products are no lower than a week ago. There has been a decided gain in bookings of tin plate for 1912 shipment and most of the larger buyers are now covered for first half. Heavy tonnage of furnace coke is under active negotiation and it is likely that some negotiations for first half delivery will be closed before the end of the week.

Pig Iron.—The recent improvement in the finished steel trade has given the pig iron market a more cheerful tone. There has been some buying of iron for delivery over the first half of the year, and the first written inquiry involving fair tonnage for this period has been received by the local trade. The American Steel Foundries during the week closed for 10,000 tons of basic pig iron for delivery at St. Louis and Granite City, Ill. The iron was sold on a basis of $15, delivered, or $12, valley, and will come from lake furnaces having lower freight rates than valley furnaces. A number of the valley producers bid on this tonnage, but would not meet the low price. Most of the valley furnaces are now quoting $13, valley, for basic for first half shipment, although $12.50, valley, can still be done on prompt business. The Westinghouse Air Brake Co. has entered the market for from 1,000 to 2,000 tons each of foundry and gray forge iron for first quarter delivery. Some foundry iron in small lots has been sold quietly and the general asking price in this district is $13.25, valley. Malleable iron has sold in lots ranging from 200 to 500 tons at somewhat under $12.75, valley. A Pittsburgh company, which recently purchased 200 tons of Bessemer, is in the market for 100 tons of this grade. Some furnace bid $14.50, valley, on this inquiry, although small sales were previously reported at 25 cents a ton under this figure. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.50
Basic, Pittsburgh	13.40
No. 2 foundry, Pittsburgh	14.00
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.40

(November-December.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.50
Basic, Pittsburgh	13.40
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.40

Ferro-Alloys.—Prices on both ferro-manganese and 50 per cent ferro-silicon are higher. There has been a sale of 600 tons of ferro-manganese for delivery in southern Ohio at slightly under $38.50, seaboard, for first half shipment and two small lots have been sold for prompt shipment at $37.50, seaboard. A Pittsburgh consumer has taken a small lot of 50 per cent ferro-silicon at $66, Pittsburgh, an advance of $8 a ton, as compared with the market level a few weeks ago.

We quote ferro-manganese at $37.50 Baltimore, for prompt shipment, and at $38, Baltimore, for forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $66, Pittsburgh, for prompt and forward delivery; 12 per cent, $24; 11 per cent, $23; 10 per cent, $22, f. o. b. Jackson, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—An enormous tonnage of plates is involved in recent car orders, of which approximately 80,000 tons will be furnished by western Pennsylvania mills. It is stated that orders have been placed for more than 20,000 cars during the past 30 days, the largest single order being that of the New York Central for 12,350 cars. The Buffalo, Rochester & Pittsburgh railroad has awarded a contract to the Pressed Steel Car Co. for 1,000 steel underframes. The Cambria Steel Co. has received orders for 300 hoppers from the Cambria & Indiana railroad and 200 tank cars for the Sun Oil Co. It is announced today that the Baltimore & Ohio Railroad Co. has practically closed for 4,500 gondola and box cars, and it is understood that this company is in the market for 4,500 additional cars. The Pennsylvania Railroad Co. is figuring on some additional equipment and is expected to buy several thousand cars. Bids will close Friday of this week on 9,000 tons of plates for the Los Angeles, Cal., aqueduct. Despite the heavy tonnage, pirces are not very firm and in a few instances 1.10c, Pittsburgh, has been shaded. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches,

1.10 to 1.15c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Specifications against contracts for sheets are coming in at a very satisfactory rate and fresh buying for prompt shipment is heavy for this season of the year, due largely to the low prices quoted recently. While prices are not any higher than a week ago, a firmer tendency is shown and the belief is growing among both manufacturers and buyers that prices have reached bottom. An encouraging feature of the local market is that a large number of the principal buyers are negotiating for forward requirements and some contracts have been made for first quarter shipment. Bookings of the leading interest so far this month have been practically normal. Some of the independents are running full time. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburgh district:

Blue annealed sheets No. 10 gage, 1.40c; black annealed sheets No. 28 gage, 1.85c to 1.90c; galvanized sheets, No. 28 gage, 2.85c to 2.90c; painted roofing sheets, $1.30 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.50 per square for No. 28 gage, 2½-inch corrugation f. o. b. Pittsburgh.

Tin Plate.—There has been a noticeable increase in bookings during the past 10 days and a majority of the larger buyers of tin plate are under contract for first half requirements. Tin mill operations are very light at present, as there is little demand for tin plate for the remainder of this year, and it is too early to make shipments against 1912 contracts. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—In addition to contracts for steel rails for 1912 previously reported, a fair portion of which will be rolled by local mills, a number of the larger trunk lines are actively figuring on their requirements for next year and it is stated officially that three or four of the larger roads will contract for much heavier tonnage than in 1910. There is a fair amount of buying in small lots for early shipment and the outlook for the rail market is regarded as more promising than for some years, as it is known that the requirements of all roads will be heavy. There is also a fair amount of light rail tonnage appearing of which a large portion is for export. Buying of railroad spikes and track supplies is more general, orders for several thousand tons of standard railroad spikes having been placed during the past 10 days on a basis of $1.40, Pittsburgh. We quote the market as follows, the base price on open-hearth rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5¼ and 9/16	$1.40
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅝	.60
2 x ⅝	.80

Steel.—Mill orders for semi-finished steel so far this month are about equal to those of the same period in October, and indications are that specifications will show a gain over the remainder of the month, as manufacturers of sheets are gradually increasing mill operations and the tin mills are arranging to make shipments against 1912 contracts. While prices are practically unchanged, a few buyers are having difficulty in picking up desirable tonnage at the extremely low prices noted at the beginning of the month. Buying has been chiefly for odd lots, as most mills are covered by contract. The disposition of mills to contract for next year is more general, although no important transactions have been closed. Quotations on billets and sheet bars follow:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $20, with the usual extras for size and analysis, and open-hearth rolling billets, $19 to $19.50; Bessemer sheet and tin bars are quoted at $21, and open-hearth sheet bars are quoted at $20 to $20.50, f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $24, Pittsburgh.

Hoops and Bands. — Specifications for hoops and bands are fair, but there is little new business appearing and competition among local mills is very keen. We quote the market as follows:

Hoops in carload lots, 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands, 1.10c to 1.15c, base, with net extras, as per standard steel.

Merchant Bars.—Several manufacturers of steel bars report that mill orders at present are as heavy as at any time this year. While comparatively little of the tonnage shipped this month is going into stocks, a more general disposition is noted on the part of the larger buyers to contract for forward requirements. Several large orders for immediate rolling have been placed during the week and in a few instances quotations as low as 1.05c, Pittsburgh, have been made, while in one instance this figure was shaded. Some mills which have a fair amount of business on their books for delivery this year are not quoting below 1.15c, Pittsburgh, but buyers have no trouble in doing 1.10c, Pittsburgh. Despite the fact that the bi-monthly examination of sales sheets of representative makers of bar iron on Nov. 11 showed a 1.20c card, mills in the immediate Pittsburgh territory are not quoting below 1.25c to 1.30c, Pittsburgh. Specifications for shafting are coming in a little more freely, but new business is not very heavy. We quote the market as follows:

Common iron bars, 1.25c to 1.30c, Pittsburgh: Bessemer and open-hearth steel bars, 1.10c to 1.15c; plow and cultivator, 1.20c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 and 5 per cent to 60 and 10 per cent off in carloads and 57 per cent in less than carloads, delivered in base territory.

Muck Bar.—There has been no important trading and little inquiry for muck bar, but the general asking price of makers is unchanged, and we continue to quote muck bar nominally at $28, Pittsburgh, with a premium of $1 a ton for all pig iron muck bar.

Structural.—Practically all structural awards in this market during the past few days have been for small lots ranging from 100 to 150 tons each. Steel companies and fabricators report that they are figuring on a large amount of new construction work, but a large portion of this likely will be held over until early in the spring. Prices are weak and quotations as low as 1.10c, Pittsburgh, have been made on small orders for structural steel. We quote the market as follows:

Beams and channels, 15 inches and under, 1.15c; over 15 inches, 1.25c; zees, 1.15c; tees, 1.20c; angles, from 3 to 6 inches, 1.15c; over 6 inches, 1.25c; universal and sheared plates, 6¼ inches wide and wider, 1.20c.

Merchant Pipe.—Liberal specifica-

WORLD'S IRON MARKETS

PITTSBURGH

More Railroad Buying—Large Tonnage of Basic Bought.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Nov. 14.

The more cheerful tone noted in this market a week ago continues and has been followed by more general buying of freight cars and steel rails by the large transportation companies. Prospects for heavy buying on the part of the railroads are exceedingly bright. Following the awards by the New York Central system for 12,350 cars, it is announced today that the Baltimore & Ohio has practically closed for about 4,500 freight cars and is in the market for 4,500 additional cars. It is also stated that the Pennsylvania Railroad Co. will enter the market for cars in the very near future. Advance information is that the Pennsylvania, New York Central, Baltimore & Ohio and other roads will order much heavier rail tonnage than in 1910. One large company in the Pittsburgh district has booked upward of 75,000 tons of plates as a result of the recent car buying and reports a larger daily average of miscellaneous orders for plates and shapes than at any time in years.

It is expected that some action will be taken before the end of this week with regard to a revision downward of ore freight rates from the lower lake ports to the furnaces in the valley and Pittsburgh districts, and that this will be followed by greater activity in the pig iron market. The American Steel Foundries during the week closed for a large tonnage of basic pig iron for western shipment and the Westinghouse Air Brake Co. entered the market for 1,000 to 2,000 tons each of foundry and gray forge iron, for first quarter shipment.

Little encouragement is found in the price situation in the finished steel market. One sale of a round tonnage of steel bars was made at 1.05c, Pittsburgh, while a smaller lot was sold at 1c, Pittsburgh. The bulk of the trading, however, has been at 1.10c to 1.15c. Concessions are still being made on structural steel and plates, although quotations on sheets, pipe and wire products are no lower than a week ago. There has been a decided gain in bookings of tin plate for 1912 shipment and most of the larger buyers are now covered for first half. Heavy tonnage of furnace coke is under active negotiation and it is likely that some negotiations for first half delivery will be closed before the end of the week.

Pig Iron.—The recent improvement in the finished steel trade has given the pig iron market a more cheerful tone. There has been some buying of iron for delivery over the first half of the year, and the first written inquiry involving fair tonnage for this period has been received by the local trade. The American Steel Foundries during the week closed for 10,000 tons of basic pig iron for delivery at St. Louis and Granite City, Ill. The iron was sold on a basis of $15, delivered, or $12, valley, and will come from lake furnaces having lower freight rates than valley furnaces. A number of the valley producers bid on this tonnage, but would not meet the low price. Most of the valley furnaces are now quoting $13, valley, for basic for first half shipment, although $12.50, valley, can still be done on prompt business. The Westinghouse Air Brake Co. has entered the market for from 1,000 to 2,000 tons each of foundry and gray forge iron for first quarter delivery. Some foundry iron in small lots has been sold quietly and the general asking price in this district is $13.25, valley. Malleable iron has sold in lots ranging from 200 to 500 tons at somewhat under $12.75, valley. A Pittsburgh company, which recently purchased 200 tons of Bessemer, is in the market for 100 tons of this grade. Some furnace bid $14.50, valley, on this inquiry, although small sales were previously reported at 25 cents a ton under this figure. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.50
Basic, Pittsburgh	13.40
No. 2 foundry, Pittsburgh	14.00
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.40

(November-December.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.50
Basic, Pittsburgh	13.40
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.40

Ferro-Alloys.—Prices on both ferro-manganese and 50 per cent ferro-silicon are higher. There has been a sale of 600 tons of ferro-manganese for delivery in southern Ohio at slightly under $38.50, seaboard, for first half shipment and two small lots have been sold for prompt shipment at $37.50, seaboard. A Pittsburgh consumer has taken a small lot of 50 per cent ferro-silicon at $66, Pittsburgh, an advance of $8 a ton, as compared with the market level a few weeks ago.

We quote ferro-manganese at $37.50 Baltimore, for prompt shipment, and at $38, Baltimore, for forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $66, Pittsburgh, for prompt and forward delivery; 12 per cent, $24; 11 per cent, $23; 10 per cent, $22, f. o. b. Jackson, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—An enormous tonnage of plates is involved in recent car orders, of which approximately 80,000 tons will be furnished by western Pennsylvania mills. It is stated that orders have been placed for more than 20,000 cars during the past 30 days, the largest single order being that of the New York Central for 12,350 cars. The Buffalo, Rochester & Pittsburgh railroad has awarded a contract to the Pressed Steel Car Co. for 1,000 steel underframes. The Cambria Steel Co. has received orders for 300 hoppers from the Cambria & Indiana railroad and 200 tank cars for the Sun Oil Co. It is announced today that the Baltimore & Ohio Railroad Co. has practically closed for 4,500 gondola and box cars, and it is understood that this company is in the market for 4,500 additional cars. The Pennsylvania Railroad Co. is figuring on some additional equipment and is expected to buy several thousand cars. Bids will close Friday of this week on 9,000 tons of plates for the Los Angeles, Cal., aqueduct. Despite the heavy tonnage, pirces are not very firm and in a few instances 1.10c, Pittsburgh, has been shaded. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches,

1.10 to 1.15c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Specifications against contracts for sheets are coming in at a very satisfactory rate and fresh buying for prompt shipment is heavy for this season of the year, due largely to the low prices quoted recently. While prices are not any higher than a week ago, a firmer tendency is shown and the belief is growing among both manufacturers and buyers that prices have reached bottom. An encouraging feature of the local market is that a large number of the principal buyers are negotiating for forward requirements and some contracts have been made for first quarter shipment. Bookings of the leading interest so far this month have been practically normal. Some of the independents are running full time. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburgh district:

Blue annealed sheets No. 10 gage, 1.40c; black annealed sheets No. 28 gage, 1.85c to 1.90c; galvanized sheets, No. 28 gage, 2.85c to 2.90c; painted roofing sheets, $1.30 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.50 per square for No. 28 gage, 2½-inch corrugation f. o. b. Pittsburgh.

Tin Plate.—There has been a noticeable increase in bookings during the past 10 days and a majority of the larger buyers of tin plate are under contract for first half requirements. Tin mill operations are very light at present, as there is little demand for tin plate for the remainder of this year, and it is too early to make shipments against 1912 contracts. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—In addition to contracts for steel rails for 1912 previously reported, a fair portion of which will be rolled by local mills, a number of the larger trunk lines are actively figuring on their requirements for next year and it is stated officially that three or four of the larger roads will contract for much heavier tonnage than in 1910. There is a fair amount of buying in small lots for early shipment and the outlook for the rail market is regarded as more promising than for some years, as it is known that the requirements of all roads will be heavy. There is also a fair amount of light rail tonnage appearing of which a large portion is for export. Buying of railroad spikes and track supplies is more general, orders for several thousand tons of standard railroad spikes having been placed during the past 10 days on a basis of $1.40, Pittsburgh. We quote the market as follows, the base price on open-hearth rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9/16	$1.40
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ¾	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅞	.60
2 x ⅞	.80

Steel.—Mill orders for semi-finished steel so far this month are about equal to those of the same period in October, and indications are that specifications will show a gain over the remainder of the month, as manufacturers of sheets are gradually increasing mill operations and the tin mills are arranging to make shipments against 1912 contracts. While prices are practically unchanged, a few buyers are having difficulty in picking up desirable tonnage at the extremely low prices noted at the beginning of the month. Buying has been chiefly for odd lots, as most mills are covered by contract. The disposition of mills to contract for next year is more general, although no important transactions have been closed. Quotations on billets and sheet bars follow:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $20, with the usual extras for size and analysis, and open-hearth rolling billets, $19 to $19.50; Bessemer sheet and tin bars are quoted at $21, and open-hearth sheet bars are quoted at $20 to $20.50, f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $24, Pittsburgh.

Hoops and Bands. — Specifications for hoops and bands are fair, but there is little new business appearing and competition among local mills is very keen. We quote the market as follows:

Hoops in carload lots, 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands, 1.10c to 1.15c, base, with net extras, as per standard steel.

Merchant Bars.—Several manufacturers of steel bars report that mill orders at present are as heavy as at any time this year. While comparatively little of the tonnage shipped this month is going into stocks, a more general disposition is noted on the part of the larger buyers to contract for forward requirements. Several large orders for immediate rolling have been placed during the week and in a few instances quotations as low as 1.05c, Pittsburgh, have been made, while in one instance this figure was shaded. Some mills which have a fair amount of business on their books for delivery this year are not quoting below 1.15c, Pittsburgh, but buyers have no trouble in doing 1.10c, Pittsburgh. Despite the fact that the bi-monthly examination of sales sheets of representative makers of bar iron on Nov. 11 showed a 1.20c card, mills in the immediate Pittsburgh territory are not quoting below 1.25c to 1.30c, Pittsburgh. Specifications for shafting are coming in a little more freely, but new business is not very heavy. We quote the market as follows:

Common iron bars, 1.25c to 1.30c, Pittsburgh; Bessemer and open-hearth steel bars, 1.10c to 1.15c; plow and cultivator, 1.20c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 and 5 per cent to 60 and 10 per cent off in carloads and 57 per cent in less than carloads, delivered in base territory.

Muck Bar.—There has been no important trading and little inquiry for muck bar, but the general asking price of makers is unchanged, and we continue to quote muck bar nominally at $28, Pittsburgh, with a premium of $1 a ton for all pig iron muck bar.

Structural.—Practically all structural awards in this market during the past few days have been for small lots ranging from 100 to 150 tons each. Steel companies and fabricators report that they are figuring on a large amount of new construction work, but a large portion of this likely will be held over until early in the spring. Prices are weak and quotations as low as 1.10c, Pittsburgh, have been made on small orders for structural steel. We quote the market as follows:

Beams and channels, 15 inches and under, 1.15c; over 15 inches, 1.25c; zees, 1.15c; tees, 1.20c; angles, from 3 to 6 inches, 1.15c; over 6 inches, 1.25c; universal and sheared plates, 6¼ inches wide and wider, 1.20c.

Merchant Pipe.—Liberal specifica-

tions against contracts for merchant iron and steel pipe are reported by all local mills and prices appear to be firm. Several large orders for line pipe have been placed and estimates are being prepared on some new lines to be laid next year which will require heavy tonnage of steel line pipe. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches.

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	73	53	68	48
⅜ inch	74	64	69	59
½ inch	77	67	72	62
¾ to 1½ inch	80	72	75	67
2 to 3 inches	81	74	76	69
	Lap weld.			
2 inches	77	70	72	65
2½ to 4 inches	79	72	74	67
4½ to 6 inches	78	70	73	65
7 to 12 inches	76	66	71	61
13 to 15 inches	..	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅛, ¼, ⅜ inch	70	60	65	55
½ inch	75	69	70	64
¾ to 1½ inch	79	73	74	68
2 to 3 inches	80	74	75	69
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	76	70	71	65
2½ to 4 inches	78	72	73	67
4½ to 6 inches	77	71	72	66
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	65	59	60	54
¾ to 1½ inch	68	62	63	57
2 to 3 inches	70	64	65	59
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	66	60	61	55
2½ to 4 inches	68	62	63	57
4½ to 6 inches	67	61	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—There is a better demand for locomotive boiler tubes on account of recent buying of locomotives, but new demand for merchant boiler tubes is light. Official discounts on steel and charcoal iron boiler tubes in carload lots, follow:

1¾ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	72
3¾ to 4½ inch	75
5 and 6 inch	67½
7 to 13 inch	65
1½ inch	48
1¾ to 2¼ inch	50
2½ inch	55
2¾ to 5 inch	60

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—Lower prices on wire products have brought out more business during the past 10 days and some companies report a moderate gain in bookings so far this month as compared with the same period in October. However, practically all mills could handle more business. There has been no trading below $1.55, Pittsburgh, on wire nails and $1.35, Pittsburgh, on plain wire and a few mills are holding for $1 a ton above these figures. Some mills, however, are quoting the lower prices on desirable business for delivery over the next 60 days. Demand for cut nails is light and prices are weak. We quote the market as follows:

Wire nails, jobbers, carload lots, $1.55 to $1.60; retailers' carload lots, $1.60 to $1.65; cut nails (western makers), jobbers' carload lots, $1.50 to $1.55; painted barb wire, jobbers' carload lots, $1.55 to $1.60; retailers' carload lots, $1.65, with 30c for galvanizing; plain wire to jobbers in carloads, $1.35 to $1.40; and to dealers, in carloads, $1.40 to $1.45; polished staples, $1.55; galvanized staples, $1.85.

Wire Rods.—There has been no important buying of wire rods, as most users are covered by contracts. Prices are not very firm and we quote Bessemer and open-hearth wire rods nominally at $25, Pittsburgh.

Coke.—Heavy tonnage of furnace coke for delivery in 1912 is under active negotiation and the indications are that some fairly large awards will be made before the end of the week. A large portion of this tonnage is being figured upon quietly by consumers and represents extensions to existing contracts. While some contracts have already been made for 1912 shipment, details are withheld for the present. The general tone of the coke market is firmer and some sellers will not quote as low as $1.50, ovens, which has been the ruling price during the past 30 days. Sales aggregating approximately 4,000 tons for immediate shipment have been made at this figure during the week. Over 600 ovens were fired up in the Connellsville region last week and production and shipments increased about 3,000 tons. A feature of the trade was the shipment to Curtis Bay, Md., of coke enough for two vessel cargoes for smelters in Arizona and in Mexico. Consumers of foundry coke are quietly negotiating for first half requirements, but no important transactions are noted. We quote, standard Connellsville furnace coke for prompt shipment at $1.50, ovens, and for delivery over the remainder of the year at $1.55 to $1.60, ovens. A definite market price for next year has not been established. On high grade Connellsville foundry coke, we quote $1.90 to $2, ovens, for prompt shipment and $2 to $2.40, ovens, for forward delivery. The Connellsville *Courier's* figures for the week ending Nov. 4, show 26,923 active ovens with an output of 322,745 tons, as compared with 26,273 active ovens and a production of 320,300 tons the previous week.

Old Material.—Bids closed today on the Pennsylvania Railroad Co.'s November scrap list and a large portion of this tonnage will go direct to consumers at prices slightly higher than realized by the company on its October list. The general tone of the scrap market is firmer, although prices are not any higher than a week ago. There is a large volume of business moving and some consumers are anxious to cover for forward requirements, while dealers, as a general rule, will not quote today's prices for delivery very far in advance. We quote, gross tons, delivered in the Pittsburgh district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$12.00 to 12.25
Rerolling rails	12.50 to 13.00
Malleable	11.50 to 12.00
Bundled sheet scrap	10.00 to 10.50
Iron axles	21.00 to 22.00
Old iron rails	14.50 to 15.00
Stove plate	9.00 to 9.50
No. 1 wrought scrap	12.50 to 13.00
Old car wheels	12.25 to 12.75
Low phosphorus	14.50 to 15.00
Machine shop turnings	8.75 to 9.00
Cast borings	8.00 to 8.50
No. 1 cast scrap	12.50 to 12.75

CHICAGO

Satisfactory Tonnages Received by Western Mills.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Nov. 14.

The first two weeks in November have been very satisfactory to the western mills from a tonnage standpoint. Heavy orders for rails, plates and structurals have been received and the sheet mills in this territory have also been able to improve their scale of operations considerably. The price situation, however, shows little change, which indicates that the tonnage recently booked, although large, is by no means sufficient to produce a rising market. Indications are growing that buyers think the present price levels are attractive enough to contract for their future requirements, but up to date comparatively little business of this character has been actually placed. The mills are not inclined to obligate themselves beyond a certain point at present prices.

Pig Iron.—The most interesting transaction of the week was the purchase of 10,000 tons of basic by the American Steel Foundries for delivery over the first half to plants at East

St. Louis and Granite City, Ill. A portion of this iron, approximately 5,000 tons, will come from the Chicago district and the balance, it is understood, will be shipped from the Mahoning Valley. On the iron coming from this district the prevailing quotation, $14.75, is understood to have been shaded approximately $1.

Sales of northern iron have shown some increase, most of the business placed being for immediate delivery. Several malleable interests have purchased small tonnages for early shipment, which aggregate quite a fair amount. The market for high silicon irons continues weak and a sale of 100 tons of Jackson county 8 per cent has been made at a price equivalent to $17.15, Chicago. Owing largely to the low price of local northern iron, the market for southern iron in this territory is very restricted at present and only small tonnages have been closed recently. A Grand Rapids foundry is in the market for 1,000 tons of Southern No. 2 for first half delivery. A Chicago manufacturer of valves and fittings is understood to be inquiring for 1,000 tons of foundry iron, running 2.25 per cent and over in silicon, other elements in proportion.

The following prices represent the market for Chicago delivery, except Northern foundry and malleable Bessemer made in local furnaces, which are quoted f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$16.50
Northern foundry No. 2	14.00
Southern foundry No. 2	14.35
Southern silveries, 5 per cent silicon	15.60
Jackson Co. silveries, 8 per cent	17.40
Malleable Bessemer	14.00
Alabama basic	14.35

Billets.—Inquiry for billets from forge shops has been a little heavier recently and buying has improved to some extent. Prices, however, remain unchanged. We quote, open-hearth forging billets, $25 and $26; re-rolling billets, $22, Chicago.

Merchant Bars.—Owing to the extremely low price of steel bars, bar iron makers are finding it difficult to maintain their quotations and in some cases concessions have been made. Although the general run of business is being placed at 1.17c, Chicago, it is not difficult for a buyer of iron bars with attractive specifications to obtain 1.15c, Chicago. Bar specifications from car builders are quite satisfactory and orders from the trade in general show a slight increase. Business, however, is by no means sufficiently active to encourage stiffness in the price situation, which remains practically unchanged; 1.25c, Chicago, is still being done occasionally on steel bars. Makers of shafting report slightly increased specifications.

We quote, Chicago delivery, as follows:

Bar iron, 1.15c to 1.20c; hard steel bars, rerolled, 1.18c to 1.23c; soft steel bars and bands and small shapes, 1.28c to 1.33c, base; hoops, 1.53c to 1.58c; smooth finished machinery steel, 1 inch and larger, 1.78c. Shafting 60 per cent off list for carload lots, 57 per cent off for less.

On iron and steel from local stock, we quote as follows:

Bar iron, 1.55c to 1.65c per pound base; soft steel bars, 1.55c to 1.65c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—The structural mills in this territory are fairly well supplied with business and have added considerable tonnage to their books within the past ten days. The large number of cars which have been ordered recently will require considerable structural material. On the other hand, fabricating contracts for buildings show a decided falling off and it is not expected that there will be any heavy activity in this direction during the winter months. The Victoria theater, Belmont and Sheffield avenues, Chicago, 286 tons, will be fabricated by the George E. Laubenheimer Co., of Chicago. Attracted by low prices, some buyers have been offering recently to make contracts for structural material at 1.33c, Chicago, but the mills are not willing to accept much future business at this price.

We quote structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.33c to 1.38c. For extras, see Pittsburgh report.

Plain material out of store, is as follows:

All angles, 3 inches and larger, including 6 inches, $1.65 to $1.75 per 100 pounds; angles over 6 inches, $1.75 to $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.65 per 100 pounds, base; channels, 3 inches and larger, $1.65 per 100 pounds, base.

Rails and Track Fastenings.—By virtue of the comparatively heavy rail orders recently placed with western makers by the Hill lines and the Atchison, local mills are in good shape for the present from a tonnage standpoint. The Great Northern is still negotiating for its requirements, which are placed at 40,000 tons. Orders for track fastenings are fair, but the prices have been yielding to general conditions. On desirable specifications, makers will accept 1.50c for spikes. We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.60c, smaller size spikes, 1.70c, base; track bolts with square nuts, 2.00c base.

Plates.—Plate mills in the west have very little complaint as far as tonnage is concerned, due largely to liberal car orders which have been placed recently. Although most of the 12,000 cars ordered by the New York Central lines will be built in the east, 2,000 box cars which were included in this business will be manufactured by the Pullman Co., at Chicago. The Chicago & Northwestern is considering the purchase of 3,300 freight cars, which is the largest single order under negotiation in the west. The Bettendorf Axle Co. will fabricate 1,000 underframes for cars to be built by the Chicago, Milwaukee & St. Paul in its own shops. The Armour car lines, Chicago, are building 400 refrigerator cars at their own shops. The Illinois Central is in the market for 30 cabooses in addition to the equipment mentioned in this report last week.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.33c to 1.38c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.65c.

Sheets.—The local sheet mill is now running practically at capacity and business seems to be coming out a little more freely. Prices show no improvement but have at least been prevented from developing further weakness. Some consumers are willing to contract ahead at present prices, but mills are endeavoring to limit their commitments as much as possible.

We quote, store prices, f. o. b. Chicago, as follows:

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Blue annealed, No. 10, 1.95c; No. 12, 2.05c. Box annealed, No. 28, 2.40c. Galvanized, No. 28, 3.35c.

Wire Products.—The weakness which has recently developed in the wire market has not stimulated the placing of orders to any great extent. Business continues to come in fairly satisfactorily from agricultural centers, but the demand for wire products in industrial lines remains quiet. The wire situation is not expected to show

much change during the rest of the year.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers, carload lots, $1.83; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.83; retailers' carload lots, $1.88; retailers', less than carload lots, $1.98, with 30c for galvanizing; plain wire to jobbers, $1.63; plain wire, retailers' carload lots, $1.68.

Merchant Pipe and Tubes.—There is a moderate tonnage of merchant pipe moving. Dealers' stocks are comparatively low but there is not much disposition to buy except for current consumption. Prices are being fairly well maintained. A fair amount of business in boiler tubes is being taken by western makers, but prices are only fairly firm.

We quote, merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛-¼ inch	70.2	49.2	63.2	41.2
⅜ inch	74.2	63.2	66.2	56.2
2 in. to 3 in.	78.2	70.2	72.2	64.2
4½-6 inches	75.2	66.2	69.2	60.2
7-12 inches	72.2	61.2	67.2	56.2
Extra Strong Plain Ends.				
⅛ inch	71.2	64.2	54.2	52.2
2-3 inches	76.2	69.2	61.2	55.2
7-8 inches	66.2	55.2	59.2	47.2
Double Extra Strong.				
⅛ inch	59.2	51.2	....	....
2-3 inches	64.2	56.2	....	....
7-8 inches	54.2	42.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¼ to 3¼ inch	65	50	46
3½ to 4½ inch	67½	50	46
5 to 6 inch	55	..	..

Cast Iron Pipe.—A Birmingham, Ala., maker has been awarded 300 tons of water pipe at Hill City, Kan. The United States Cast Iron Pipe & Foundry Co. is low bidder on 650 tons of water pipe at Lincoln, Neb. A general contract for laying 120 tons of water pipe has been let at Mound City, Kan. Routine business is rather light.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $26.50; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—Prices last week moved between very narrow limits and with the exception of steel car axles, no pronounced weakness is evident. Steel axles have sold from $15.50 down to $15 per net ton. Some No. 1 cast has changed hands at $10.25 per net ton. The market was rather quiet last week and dealers seemed somewhat less inclined to urge their holdings upon the consumers.

We quote for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.

Old car wheels	$12.00 to 12.50
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.00 to 12.50
Old steel rails (3 ft. and under)	10.75 to 11.25
Frogs, switches and guards	10.00 to 10.50
Heavy melting steel	9.75 to 10.25
Shoveling steel	9.25 to 9.75

NET TONS.

No. 1 R. R. wrought	$10.00 to 10.50
No. 2 R. R. wrought	9.00 to 9.50
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.00 to 10.50
Shafting	13.00 to 13.50
Iron car axles	16.75 to 17.25
Steel car axles	15.50 to 16.00
Locomotive tires	14.00 to 15.00
Dealers' forge	9.25 to 9.75
Pipe and flues	7.00 to 7.50
No. 1 cast	10.25 to 10.75
No. 1 busheling	8.00 to 8.50
No. 2 busheling	6.00 to 6.50
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	12.50 to 13.00
Cast and mixed borings	5.00 to 5.25
Machine shop turnings	6.00 to 6.50
Railroad malleable	9.50 to 10.00
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.00 to 12.50
Angle bars, steel	8.75 to 9.25
Stove plate and light cast scrap	9.25 to 9.75

CLEVELAND

The New Steel Plant—Good Inquiry For Finished Material.

Office of THE IRON TRADE REVIEW,
Penton Building, Nov. 14.

Iron Ore.—A few wild cargoes of iron ore were given out by shippers yesterday. The extremely cold weather has interfered with the movement of vessels and handling of ore at docks. The ore shipping season is rapidly drawing to a close and the Pittsburgh Steamship Co. will ship its last cargo Saturday.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The announcement that Corrigan, McKinney & Co. will build a steel plant which will take practically all of the output of the firm's blast furnaces will be of much interest to pig iron manufacturers, as Corrigan, McKinney & Co. are now a very important factor in the pig iron market. Although it is still believed to be possible to obtain very low prices, buyers do not seem to be much interested in the market and very few sales have been made. The most important inquiry which has been received is for 6,000 tons of basic pig iron for the Alliance plant of the American Steel Foundries. We quote delivered in Cleveland for the remainder of this year and the first half of next year, as follows:

No. 1 foundry	$13.50 to 13.75
No. 2 foundry	13.00 to 13.25
No. 2 southern	14.35
Gray forge	12.50
Bessemer	15.15
Lake Superior charcoal	16.50
Jackson Co. 8 per cent silvery	17.05

Coke.—The sales of foundry coke for next year's delivery reported two weeks ago have not continued, except in a very limited way, and the market is now extremely quiet with a wide range of quotations.

Connellsville furnace coke, $1.50 to $1.55 for prompt delivery, and $1.60 for last quarter; Connellsville foundry coke, $1.90 to $2.35 for prompt, and $2.15 to $2.35 for first quarter.

Finished Material.—The question as to what extent Corrigan, McKinney & Co. will install finishing mills will be a matter of lively interest to dealers in finished material. It is not expected, however, that the new plant will have anything but crude steel to offer for a year or two at least. Though specifications are light, there is a gratifying increase in inquiries, and many contractors are asking to be protected on jobs that they have taken or expect to get. Some of these same people were not willing to take protection a few weeks ago. There is a general feeling that bottom prices have been reached on finished materials. One independent company reports a large number of inquiries, aggregating about 7,000 tons, pending. It is expected that the new Harvey hotel will require from 600 to 700 tons of steel. The Carnegie Steel Co. will shortly contract for the erection of an addition, 70 x 200 feet, to its warehouse on Thirty-ninth street, which it purchased from the Bassett-Presley Co., some time ago. The addition will be equipped with cranes, saws and all necessary machinery for the handling of structural material.

Old Material.—A more cheerful tone has been given the local market by several inquiries that have appeared. One local consumer of heavy melting steel has made a firm offer of $11 for a fair tonnage, but as recently as Saturday a local dealer bought at $11.25. Busheling is in more active demand and $9.50 has been passed over on an inquiry by a local mill for 500 tons. We quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$14.00 to 14.50
Old steel rails (under 6 ft.)	12.00 to 13.00
Old steel rails (over 6 ft.)	12.75 to 13.00
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	9.50 to 10.00
Malleable iron (railroad)	11.50 to 12.00
Steel axles	18.00 to 18.50
Axle turnings	8.50 to 9.00
Malleable iron (agricultural)	10.75 to 11.25

Heavy steel	11.00 to 11.50
Country mixed steel	9.00 to 9.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 1 busheling	9.00 to 9.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	6.50 to 6.75
Pipes and flues	8.50 to 9.00
Wrought drillings	6.50 to 6.75
Stove plate	9.00 to 9.50
Cast borings	6.00 to 6.50
Wrought iron piling plate	15.00 to 15.50
Wrought iron arch bars	15.50 to 16.00

CINCINNATI

New Business in Pig Iron Light.—Shipments are Satisfactory.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., Nov. 14.

Pig Iron.—The past week has not been productive of any large business, yet the aggregate of small orders has been considerable. A large percentage of the business transacted has been done in a quiet manner, and very few general inquiries have gone forth. It is generally assumed that consumers in various sections have covered for the first quarter of next year in a number of instances, but as compared with those who have yet to buy, the tonnage has been light. It is very evident, however, that buyers and sellers are gradually getting closer together, as it becomes more apparent each day that prices have receded to practically cost of production, and furnace interests are unwilling to go lower. Statistics indicate that stocks on southern furnace yards decreased over 10,000 tons during October, showing that a fair tonnage is being melted. Orders for delivery of contract shipments continue in good shape, although in many instances order books are gradually becoming smaller, indicating new business to be very light. Several sales of high silicon irons were made within the past three or four days, as well as some special iron at about market quotations. Northern furnaces are holding firmly to quotations, and there have been no sales made so far as could be ascertained below $13 Ironton. A concern in the central part of the state is figuring on 1,000 tons of northern foundry grades for next year, and will probably buy within the next week. A local melter is inquiring for 200 tons of southern, 240 tons of northern, and 160 tons of malleable, all analysis iron, for early shipment. A Michigan melter is inquiring for 150 tons of analysis iron, a concern in Illinois territory wants quotations on 1,000 tons of malleable, and a Tennessee consumer wants 50 tons of northern charcoal and 125 tons of analysis grades. Freight rates from Birmingham $3.25, and from Ironton $1.20. We quote as follows:

Southern foundry No. 2	13.25 to 13.50
Southern foundry No. 3	12.75 to 13.25
Southern foundry No. 4	12.50 to 12.75
Southern gray forge	12.50 to 12.75
Mottled	12.25 to 12.50
Southern No. 1 soft	14.70 to 15.20
Southern No. 2 soft	14.20 to 14.70
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—There is one sale of foundry coke reported aggregating about 1,200 tons. Aside from this, little is to be noted in the way of foundry brands, excepting the usual run of small prompt orders. It is a month or so too early in the season for new contracting along furnace brands, and the market is quiet and featureless. Shipments on contracts are, however, being well maintained and the coke is moving in a satisfactory manner. We quote from the leading coke producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.55 to 1.65	1.75 to 1.90
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.10	2.00 to 2.10
Furnace coke	1.50 to 1.75	1.60 to 1.75
New river		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Steel bars are easy at 1.10c, shapes at 1.20c and plates at 1.15c, Pittsburgh. A fair run of new specifications has been received during the week. Most of them, however, were for small tonnage. About the only work that is now pending is the Ludlow avenue viaduct, to be built of reinforced concrete, that will require a small tonnage of reinforcing steel bars.

Old Material.—Demand for scrap has not developed to any great extent since last report, and the market is without feature. Dealers say sales can be made at concessions, but it is a difficult matter to maintain quotations. Some iron is being piled, although there have been no large offerings so far as known. Prices show some fluctuation, but are about as follows:

GROSS TONS.

Old iron rails	$12.00 to 13.00
Old steel rerolling	11.00 to 11.50
Old iron axles	18.00 to 18.50
Steel melting scrap	9.50 to 10.50
Car wheels	10.50 to 11.00

NET TONS.

Old No. 1 R. R. wrought	$10.50 to 11.50
No. 1 machinery	10.00 to 10.50
No. 1 busheling	8.00 to 9.00
Stove plate	6.50 to 7.00
Machine shop turnings	5.50 to 6.00
Cast borings	4.50 to 5.00
Grate bars	6.00 to 7.00
Sheet iron bundled	6.50 to 7.50
No. 1 cast scrap	10.00 to 10.50
Heavy turnings	6.00 to 7.00

PHILADELPHIA

Low Prices Cause Dissatisfaction —Active Boat Work.

Nov. 13.

It cannot be said that the eastern iron and steel market is gaining much ground at present. Some of the mills show lighter operations and are talking less cheerfully, but the general sentiment of the market is expectantly hopeful and encouragement is derived from the statements of heavier railroad buying, which eastern makers have felt slightly, if at all. Much of the present dissatisfaction with manufacturers of finished steel is due to the low prices in which cutting continues. Eastern steel works are holding up shipments of basic iron because of lighter consumption and some accumulation of metal. Foundry iron shows a good demand. Scrap is still quiet.

Pig Iron.—Statistically the eastern market continues to show underlying strength, especially in foundry and forge grades, which are of limited supply, but prices manifest no advancing movement. The monthly meeting of the Eastern Pig Iron Association in this city disclosed relatively light stocks of foundry and forge grades and the furnaces continue to experience considerable trouble in keeping up with shipping instructions. In some cases they are behind in deliveries and consumers because of light stocks on their yards are quick to enter complaints. Merchant iron production in eastern Pennsylvania continues unchanged at about 60 per cent. The situation in steel-making iron in the east appears quite as unfavorable as it is favorable in the foundry and forge grades. Eastern steel works are consuming basic at a lighter rate than they had anticipated when they closed contracts covering their forward needs. Some of them have accumulated considerable iron. In two or three cases, the furnaces have suspended shipments entirely at the request of these buyers. There is considerable activity

in low grade iron, the supply of which is apparently small with northern and Virginia makers. One of the Virginia pipe makers inquiring for 5,000 tons for November-December shipment was able to pick up only about 2,000 tons of southern and Virginia low grade metal at $12 to $12.25, delivered, or on the basis of $9, Birmingham. Late purchases by Virginia pipe makers have been about 5,000 tons. There have been several additional lots of iron sold to the Delaware river pipe foundries at about $14, delivered, and one consumer is still out for 2,000 tons for February shipment. Small sales continue the rule in regular foundry irons at $15 to $15.25, delivered, for No. 2X. Some Virginia iron has been sold for first quarter shipment at $12.50, furnace, for No. 2X. This more clearly indicates the market for that period, which has been nominally quoted at $12.75, furnace. Owing to the overbought condition of the market, the basic outlook is uncertain. There is no inquiry at present, as some negotiation with central Pennsylvania consumers has been practically withdrawn. Eastern and central Pennsylvania makers of foundry iron declare that they are not trying at present to meet the competition of Buffalo furnaces for New England business at $13, Buffalo, or $15.45, delivered, for No. 2X.

We quote for prompt and first quarter shipment, as follows:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 14.75
Standard gray forge	14.25 to 14.50
Basic	14.50
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.00 to 14.50
Standard low phosphorus	20.00 to 20.50

Finished Material.—On the average, operations of eastern steel works are not as favorable as they have been, though this slowing down is not of marked extent. Steel capacity is engaged not much over 50 to 60 per cent of its total. In some cases, where operations are less, this has been caused by unwillingness to meet some of the extremely low prices offered in the eastern market. Sentiment in such instances is not good, but, on the whole, it may be said to be cheerful and encouragement is derived from the reports of heavier railroad buying, the influence of which has not been so apparent in the east as it has probably been with Pittsburgh mills.

The dividing with the consumer of the Pittsburgh freight advantages by makers with plants located nearer to the eastern seaboard continue to reveal some very low price levels, if figured back to the Pittsburgh base, which is not altogether a proper comparison under prevailing conditions of competition. As an example of one of these cases, a Reading buyer is reported to have bought 500 tons of concrete bars from a nearby mill on a basis equivalent to 1.03c, Pittsburgh. The Carnegie Steel Co. took 100 tons of twisted steel bars from the government for Panama shipment at a bid of 1.101c, Pittsburgh. An extra is usually asked by the mills for twisting. Several eastern plate consumers have recently bought plates as low as 1.10c, base Pittsburgh, but some of the eastern mills declare they will not meet such prices, which are equivalent to 1.25c, Philadelphia. Shape business in this territory is usually going at 1.30c to 1.35c, delivered, or 1.15c to 1.20c, Pittsburgh. Some independent tin plate makers in the Pittsburgh district have been shading the market $1 to $3.35, Pittsburgh, and it is reported a $2 cut has been made in some cases. There is considerable buying of tin plate for delivery running up to July 1, 1912, under way in the east.

The Philadelphia Steel & Wire Co. has been awarded the second section of the work of converting Jones' Falls, in Baltimore, into a boulevard by building it over with concrete work. This contract requires about 1,500 tons of bars, which will come from Pittsburgh mills. The same company is now completing the first section of the work. Louer & Harper, Baltimore, have 250 tons for a bakery in Washington. The Bethlehem Steel Co. will furnish 1,500 tons of plain material for the Heard building, Jacksonville, Fla., recently awarded the Virginia Bridge & Iron Works. Plans are out for the Philadelphia stock exchange, to close Nov. 24, about 2,000 tons, and for three warehouses for the Spreckles Sugar Refinery Co., about 1,000 tons, in which each bidder must submit steel designs. The Pennsylvania railroad is out for about 1,000 tons of shapes for car construction and has placed 250 tons of plates with Pittsburgh mills. Bids are going in this week on the building for the bureau of printing and engraving at Washington, about 4,000 tons, which is of Bethlehem design. The courts have under advisement the tax payers' plea for an injunction against the municipal convention hall, this city, 12,000 tons, and the outlook for the work proceeding is not regarded as promising. Revised estimates show that the steel for the Dock street pier, this city, to close Nov. 14, will not exceed 800 tons.

We quote for delivery in Philadelphia and vicinity as follows:

Structural shapes, 1.30c to 1.35c; steel plates, 1.25c to 1.35c; steel bars, 1.20c to 1.25c; common bar iron, 1.20c to 1.25c; cut nails, $1.75 to $1.80; blue annealed sheets, No. 10 gage, 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $21.40 to $22.40; forging billets, $26.40 to $27.40. Extras shown under Pittsburg report.

Billets.—There is a slightly stronger tendency to be noted in semi-finished steel in that eastern makers are not so willing to sell at the minimum prices that have been ruling. In some cases, better than $19, Pittsburgh, or $21.40, Philadelphia, has been obtained for open-hearth billets, although the former price has not yet disappeared. On forging billets, $26.40, Philadelphia, is asked. Small sales dominate the market.

Boat Construction.—The Clyde Steamship Co. has placed an order with the Newport News Ship Building & Dry Dock Co. for a large vessel which will require 3,000 to 4,000 tons of steel. This line has been figuring on another boat of similar size. The Cramp yard has taken another small boat and the Harlan & Hollingsworth Corporation several wooden craft. One ship builder reports he has outstanding tenders for eight vessels, all of large size. With one or two exceptions, all the eastern yards are getting well filled with work and the outlook for the eastern ship building industry continues very bright.

Old Material.—Eastern steel works have been approached in a tentative way on a lot of 50,000 tons of English melting steel, but conditions are not favorable for any importation and nothing definite in the matter is likely to develop at this time. A Coatesville buyer has closed for a round lot of railroad steel at $12, delivered, but the large tonnage offered by the Pennsylvania railroad will not be allotted until this week. There is some increase of inquiry from brokers covering on contracts and in some cases higher prices have been offered. Old iron rails have sold at $15, delivered, in fair lots, and lower in smaller transactions. The market is still devoid of buying volume and is generally dull, but the more hopeful sentiment continues.

We quote, gross tons, delivered in eastern Pennsylvania and New Jersey territory, as follows:

Old iron rails	$15.00 to 15.50
Old steel rails (rerolling)	12.75 to 13.50
No. 1 heavy melting steel	11.50 to 12.00
Old car wheels	11.25 to 11.75
Old iron car axles	22.00 to 22.50
Old steel car axles	16.50 to 17.00
No. 1 R. R. wrought	13.75 to 14.25
Wrought pipe	10.75 to 11.25
Cast borings	7.50 to 8.00
Wrought turnings	8.25 to 8.75
Heavy cast scrap	12.50 to 12.75
Railroad malleable	11.25 to 11.75
Stove plate	9.25 to 9.75

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points

are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

NEW YORK

Encouragement Over Railroad Buying —Low Prices Cause Complaint.

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., Nov. 14.

Iron Ore.—Under present conditions, there is practically no interest in forward requirements of iron ore by eastern furnaces. Occasional small sales of domestic and foreign ores are being made for filling-in mixtures, but even such transactions are few. The foreign ore movement is very light, the shipments so far this month being confined to one cargo of Swedish ore and one of New Brunswick Canadian ore.

Pig Iron.—Buyers are still moving cautiously in closing for their requirements as far ahead as the second quarter, owing to the promised lower ore costs for the furnaces by that date or later, which form the basis for an expectation of lower pig iron prices. The market is quiet and aggregate sales are relatively small, but there is in prospect considerable foundry tonnage, which has been backed up through the present hesitation of the buyers and amounting to probably 12,000 tons. In addition, some quiet negotiations are being carried on, calling for about 5,000 tons. Some fair sized lots of foundry iron are being closed for shipment this year and first quarter, but the most sizable transactions are the purchases of the eastern cast iron pipe makers of low grade metal, consisting of off foundry, off basic and forge grades. One Delaware river pipe foundry has closed for 5,000 tons of low grade iron from an eastern Pennsylvania furnace for shipment over the rest of this year and first quarter at about $14, delivered. Recent purchases of low grade iron by eastern and Virginia pipe makers have amounted to 15,000 to 20,000 tons and some business is still pending. For delivery into eastern Pennsylvania, $14, delivered, is usually paid on northern pipe grades, although this price has been shaded in some cases. A railway equipment manufacturer in the Buffalo district has bought from Buffalo furnaces 2,000 tons of malleable for shipment this year and partially through first quarter. Malleable iron is quoted at from $13.25 to $13.50, furnace, by Buffalo makers. A Newark, N. J., shop took 800 tons of eastern Pennsylvania No. 2X for first quarter at about $15, delivered. Some small lots of Virginia iron for shipment this year have been bought in metropolitan territory at $12.25, furnace, for No. 2, or about $15, tidewater. The General Electric Co. has been receiving bids on an inquiry for 1,500 tons of No. 2X and 1,000 tons of low phosphorus iron for first quarter shipment at its Pittsburgh field and Lynn, Mass., plant. A pump maker is inquiring for 750 tons for shipment this year to a New Jersey plant. The supply of prompt foundry iron with eastern Pennsylvania furnaces continues quite small and the condition of some backwardness in deliveries remains apparent. The unusual condition in this market of foundries being obliged temporarily to close for lack of iron was shown in the case of two New Jersey shops the past week. Eastern Pennsylvania foundry iron continues quoted at from $14.25 to $14.50, furnace, for No. 2X or $15 to $15.25, tidewater. Buffalo makers do not seem as aggressive at present for business in the metropolitan district. The No. 2 Crane furnace of the Empire Steel & Iron Co., at Catasauqua, Pa., has gone out for repairs and relining. The Temple furnace of the Reading Iron Co. may shortly resume on foundry iron. We quote, for prompt and first quarter shipment, as follows:

Northern foundry No. 1	$15.25 to 15.50
No. 2X foundry	14.75 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.25 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.25 to 14.50

Ferro-Alloys. — Indications in the market continue to point to a firming up of price conditions on ferro-manganese applying to early delivery, in which considerable material in the hands of merchants was being offered at concessions, in some cases as low as $36.50 seaboard. Either a considerable portion of these bargain offerings have been absorbed by the market or holders are stronger in their price views. Several sales of ferro-manganese for early shipment have been recently made at $37.50, Baltimore, and buyers in some cases are now offering as high as $38.25, seaboard, for deliveries running into the first quarter. The forward market continues to be quoted by English makers at $38.50, but as far as known, no sales at this level have yet been made and buyers who had put out inquiries, expecting lower prices, are now holding off. Present inquiry is not heavy. A St. Louis consumer is out for 500 tons of ferro-manganese and 400 to 500 tons of 50 per cent ferro-silicon for delivery through 1912. The inquiry for ferro-silicon is fair. We quote 80 per cent ferro-manganese for prompt and forward shipment at from $38.50 to $38, Baltimore, and 50 per cent ferro-silicon at from $58 to $60, Pittsburgh.

Cast Iron Pipe.—A heavy tonnage of cast iron pipe is being offered by water and gas companies for spring shipment in private negotiations and the market upon this side shows the most activity in many weeks. Shrewd buyers of this class are apparently satisfied to close for their forward requirements at this time and avoid any possible upturn of prices in the spring. Pipe makers are encouraged by this development. Public lettings are few. About 16,000 tons of pipe is still pending from the contractors on work recently let in this city, but the destination of the business is well understood. A public letting of 12,000 tons of pipe for Quebec has raised some interest among the eastern pipe shops. We quote six inch pipe, in carload lots, at from $21 to $22, delivered, f. o. b. New York.

Finished Material.—The favorable points developed by the finished iron and steel market have largely to do with the concrete evidence of greater railroad buying presented in the increased orders for equipment placed by some of the leading systems. Although it is a generally appreciated fact that the prices quoted by car builders represent little more than cost, the influence of such unusual prices has been to stir up increasing interest of the railroads to re-establish their run-down equipment needs. By such a stimulus and from such a direction as buying by the railroads, it is appreciated that improvement of the present depressed situation must come. The sharp competition for business and the accompaniment of deeply shaded prices, continues to make present conditions extremely unsatisfactory from a producer's standpoint and there is a disposition being manifested by some makers to engage less actively in price cutting policies, which may result, if extended, in prices firming up later on. Shapes and plates are being quoted over the range of 1.10c to 1.20c, Pittsburgh, and steel bars from 1.05c to 1.10c, Pittsburgh, though these prices are not necessarily the offerings of Pittsburgh makers, since the sharing with

the consumer by the mills of a part of their freight advantages over the Pittsburgh base, is common.

Structural offerings in New York City, especially in the apartment line, are more active after the past several weeks of relative quietness, during which but few awards of any description were made. A heavy tonnage has accumulated, upon which bids have been entered, and awards are still coming slowly. The Eastern Steel Co. has taken 1,500 tons for the Seamen's Institute, Coentiss Slip, this city; the Passaic Steel Co., 1,100 tons, for an apartment on Madison avenue between Eighty-second and Eighty-third streets; Ravitch Bros., 800 tons for an apartment up town for the Carnegie Construction Co.; Lauer & Harper, 500 tons for the Powhattan hotel, Washington; the American Bridge Co., 500 tons, for public school No. 61, this city; Levering & Gerrigues, 200 tons for school No. 132, and the American Bridge Co. has finally been given the definite award of 1,500 tons for the Otis Elevator Co. building, this city. L. H. Focht, of Reading, has the contract for the construction of a reinforced concrete bridge over the Schuylkill river at Reading, which requires from 1,000 to 1,200 tons of steel bars. Snare & Triest have the general contract for a highway bridge over the Passaic river, between Harrison and Newark, N. J., about 1,000 tons. The Industrial Engineering Co. has taken the general contract for an addition to the Flanders hotel, this city, 300 tons. Plans were issued this week for the Eagle loft building, Fourth avenue and Twenty-first street, this city, which will require 3,000 to 4,000 tons. Plans are out for the Wyckoff apartment, Fifty-fourth street and Madison avenue, 600 tons; for a garage on Eighty-third street, 600 tons, and bids are in on the Emmett loft building, Twenty-ninth and Madison avenue, 1,800 tons. The Chesapeake & Ohio railroad is taking figures on requirements of about 2,250 tons, including two bridges of 500 tons each, and 250 steel underframes. Bids have gone in on 1,300 tons for the Hoosac mills at North Adams, Mass. Bids went in the past week on the Seneca building, Buffalo, 2,200 tons. An apartment at 116th street and Broadway, 800 tons, is up for figures.

Bids will be taken by the Public Service Commission, of this city, Dec. 5, for the construction of section 9, of the Lexington avenue subway, which will require about 2,700 tons of structural shapes and steel bars. Few steel bar contracts have yet been placed in connection with the sections of the Lexington avenue subway, which are now under general contract. The bar requirements of the sections let are about 5,000 to 6,000 tons. We quote, delivered at New York tidewater, as follows:

Plain structural shapes, 1.26c to 1.36c; tank plates, 1.26c to 1.31c; steel bars, 1.21c to 1.26c; common iron bars, 1.25c; plates and shapes from store, 1.70c to 1.80c. Extras shown under Pittsburgh report.

Rails and Track Material. — The Colorado Fuel & Iron Co. has been awarded 30,000 tons of open hearth rails by the Chicago, Burlington & Quincy. This is in addition to the 20,000 tons placed by this line with the Illinois Steel Co., as reported last week, making a total order of 50,000 tons. The Philadelphia & Reading railroad and the Central Railroad of New Jersey have given out a partial order for their 1912 needs, amounting to 15,000 to 20,000 tons, which is divided between the Pennsylvania Steel Co. and Bethlehem Steel Co. Additional orders will be placed later. It is stated on high authority that the Pennsylvania railroad order for 1912 delivery may reach 250,000 tons, which would be an increase of 100,000 tons over the present year's orders. Some rail makers closely affiliated with the Pennsylvania system have anticipated that the rail order for 1912 of these lines would be less than the present year, owing to the fact that a portion of 1911 purchase is still unspecified with the mills. The Carnegie Steel Co. reecives 12,000 tons of the recent Norfolk & Western order of 25,000 tons and the remainder is divided between the Maryland Steel Co. and the Cambria Steel Co.

Old Material.—There continues a lack of any sizable buying of scrap and the market belongs to the consumer, who is exercising his advantage more or less indifferently and then usually at the opportunities of greatest advantage to himself. In small sales, a fair tonnage in the aggregate is being taken by eastern consumers, but almost as much of this is being done through bargain offerings put up to them by scrap holders as upon their own offers. A sale of 500 tons of yard steel at $12 delivered in eastern Pennsylvania is noted. There is no especial demand over others for any of the grades. We quote gross tons prices New York dealers will pay at tidewater with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$ 9.75 to 10.00
Old iron axles	18.00 to 18.50
Old steel shafting	13.50 to 14.00
No. 1 heavy melting steel	9.50 to 10.00
No. 1 R. R. wrought	11.50 to 12.00
Iron track scrap	11.00 to 11.50
Wrought pipe	9.00 to 9.25
Cast borings	5.75 to 6.25
Heavy machinery cast	11.50 to 12.00
Railroad malleable	9.00 to 9.50
Stove plate	8.00 to 8.25
Grate bars	6.25 to 6.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York.

ST LOUIS

Better Tone to Pig Iron Market Through Sales and Inquiries.

Nov. 13.

Pig Iron.—The market has a better tone, inquiries appearing for 1,000 tons of malleable for shipment from November to March, 2,000 tons of car wheel iron, and about 500 tons of ferro-manganese. The latter is for shipment over the whole of next year. In addition to these, quite a number of inquiries are out for small lots. One sale was made Saturday of 200 tons of 8 per cent silicon iron for shipment over the first half of next year, and several small orders for southern iron were booked toward the close of last week. Prices of southern No. 2 remained at $10 to $10.50, Birmingham basis, and at $13 to $13.50 for northern, f. o. b. Ironton. Prices of southern iron, delivered, to which the Birmingham freight of $3.75 a ton has been added, follow:

Southern No. 1	$14.25 to 14.75
Southern No. 2	13.75 to 14.25
Southern No. 3	13.50 to 14.00
Southern No. 4	13.25 to 13.75

Coke.—Business is rather dull, with inquiries few and scattering and for small lots only. Prices remain as follows:

We quote 72-hour Connellsville foundry grades, $1.90 to $2.40 for whole of 1911; 72-hour foundry, $1.90 to $2.15 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.40 to $1.50; best 72-hour Virginia foundry, $2 to $2.25; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—A well-defined impression is abroad that the Barr building project has been financed, and that a 22-story steel frame office and department store structure is assured for the block bounded by Olive, Locust, Sixth and Seventh streets.

Work is progressing now on the 10-story office building the Laclede Gas Light Co. is erecting at Tenth and Olive street, and the contract for the steel probably will be let within a short time.

Old Material.—The local situation is unchanged. Very little buying is going and dealers apparently do not expect immediate improvement. Prices remain as follows:

GROSS TONS.

Old car wheels	$12.50 to 13.00
Old iron rails	13.00 to 13.50
Re-rolling rails (5 feet and over)	11.75 to 12.25
Old steel rails (3 feet and under)	10.25 to 10.75
Light section relayers (45 lb. and under, subject to inspec..	19.00 to 21.00
Re-laying rails, subject to inspec.	23.00 to 23.50
Frogs, switches and guards	10.00 to 10.50
Heavy melting steel	10.00 to 10.50
Shoveling steel	9.50 to 10.00

NET TONS.

No. 1 railroad wrought	$10.00 to 10.25
No. 2 railroad wrought	9.00 to 9.25
Arch bars and transoms	13.00 to 13.50
Knuckles, couplers and springs	9.00 to 9.50
Shafting	13.00 to 13.50
Iron car axles	17.00 to 17.50
Steel car axles	15.00 to 16.00
Locomotive tires	14.00 to 14.50
No. 1 country wrought	8.50 to 8.75
Pipe and flues	7.00 to 7.25
Tank iron and cut boilers	6.75 to 7.00
No. 1 cut busheling	8.00 to 8.50
No. 2 cut busheling	5.75 to 6.00
Cast and mixed borings	5.00 to 5.25
Machine shop turnings	6.00 to 6.50
Railroad malleable	9.00 to 9.50
Agricultural, malleable	8.00 to 8.50
Stove plates	8.50 to 9.00
Angle splice bars (iron)	10.00 to 10.50
Angle splice bars (steel)	9.00 to 9.50

Moderate Tonnage Sold.—Persistent Rumor of Price Shading.

Birmingham, Ala., Nov. 13.

Pig Iron.—An aggregate of 3,500 to 4,000 tons for comparatively early delivery was engaged in this market during the past week. So far as can be ascertained, the lowest quotations that have been submitted were on a basis of $10 per ton Birmingham for No. 2 soft, but there is persistent rumor to the effect that shading even of the $10 price has resulted in competitive territory. The inquiry from all quarters of the trade that is now pending is very light comparatively, and on recent dates additional tonnage has been withheld against contract at the request of the purchaser. The reduction of some 10,000 tons in stock accumulations that was effected during the month of October is, of course, an encouraging feature; yet when the fact that the production in this district alone during the first ten months of this year was some 200,000 tons less than the production during the same period of last year is considered, the reducing of stocks to an aggregate of some 210,000 tons does not, necessarily, indicate a flourishing market. On Nov. 1, the producing capacity in the state of Alabama was represented by 19 active stacks, of which two were producing machine cast foundry iron and four stacks producing basic. It is understood that at certain plants, order book requirements for shipment during the remainder of the year are in excess of the rate of production, and two of the large producing interests have not yet taken business for delivery further advanced than the first quarter. However, it is the consensus of opinion that the consuming interests will not take hold extensively for their advanced requirements under the general conditions that exist, and that the market for next year's requirement will not take concrete form until Jan. 1, at least. The sales that have been made for some months past have covered a very wide range of territory, and in all cases the purchasers have followed a conservative course, both as to entering contracts and in taking material actually into stock. For prompt shipments and for delivery covering the first quarter of next year, we quote the market nominally as follows, per ton of 2,240 pounds, f. o. b. cars, Birmingham district:

No. 1 foundry	$10.50
No. 1 soft	10.50 to 10.75
No. 2 foundry	10.00
No. 2 soft	10.00 to 10.25
No. 3 foundry	9.50 to 9.75
No. 4 foundry	9.25 to 9.50
Gray forge and mottled	9.00 to 9.25

Cast Iron Pipe.—It is now understood that the North Birmingham plant of the United States Cast Iron Pipe & Foundry Co. will not be put in operation until sometime next spring, but that those plants now in operation have a nominal volume of business with sufficient additional in sight to warrant steady operations through the winter months. An aggregate of some 1,500 tons of water pipe was placed in this market during the past week and at prices in line with quotations. A contract for 5,000 tons of water pipe is soon to be placed by the government for requirement at Colon, Panama, which is the largest single tonnage in sight at this time. Local producers feel very confident of their ability to maintain prices, notwithstanding the shrinkage in the volume of business being placed; and we continue to quote, as follows, per net ton, f. o. b. cars here:

Four to 6-inch, $22.50 to $23; 8 to 12-inch, $21.50 to $22; over 12 inch, average $21. This schedule covers water mains only, and gas pipe takes its usual differential of $1 per ton higher.

Old Material.—No change has been noted in the condition of this market with the buying interest taking on bargain lots only from time to time as they are offered. Dealers have not added to their stocks to an extent greater than the rate of movement and, consequently, are not forced to make concessions. We continue to quote dealers' asking prices nominally as follows, per gross ton here:

Old iron axles (light	$12.50 to 12.75
Old steel axles	11.00 to 11.50
Old iron rails	11.50 to 12.00
No. 1 railroad wrought	10.50 to 10.75
No. 2 railroad wrought	8.75 to 9.00
No. 1 country wrought	6.75 to 7.00
No. 2 country wrought	6.00 to 6.25
No. 1 machinery, cast	8.50 to 8.75
No. 1 steel, scrap	8.25 to 8.50
Tram car wheels	7.50 to 8.00
Standard car wheels	9.25 to 9.75
Light cast and stove plates	6.00 to 6.25

Coal and Coke.—The best grades of run-of-mine steam coal are readily bringing $1.55 to $1.65 per ton at mines, when bought on the open market, and the established scale for domestic coal has been fully maintained with premiums asked in some cases. There has been some labor trouble in local circles during the last 60 to 90 days, and in some cases shortage of railroad equipment is complained of. The condition of the coke market is unchanged.

BRITISH IRON MARKET

Pig Iron Market Brighter and Steel Makers Rushed.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Nov. 4.

Pig Iron.—A slight improvement took place in the pig iron market this week, even the Cleveland district showing the result in better prices. Selling prices of No. 3 are 46s 9d ($11.44) for prompt delivery, but some makers are asking 47s ($11.50) for delivery to the end of the year, and 47s 6d for the first quarter of next year. The better bookings have placed makers in a stronger position and they are more inclined to wait for the better times expected. There has been a further fall in stocks, which now stand at 575,000 tons, or 27,000 below the recent maximum. Many northern consumers must come on the market shortly. The hematite market is, if anything, slightly weaker, and makers of basic iron find a difficulty in disposing of their material.

For East Coast mixed numbers, makers can get no more than 60s 6d ($14.80) and with rubio ore at 20s this is considered unprofitable.

METAL MARKETS

St. Louis

Nov. 13.

Lead and Zinc.—The top price realized for zinc blende in the Missouri-Kansas-Oklahoma district last week was $52.05, sold on a contract basis on the spelter quotations of 6.27c, East St. Louis, for the previous week. For 60 per cent grades, the base price was $47.79. The top price in the open market was $49 a ton, an increase of $1 over the prevailing prices of the last few weeks. The offerings for 60 per cent qualities ranged from $46 to $50. Calamine prices ranged from $24 to $27 for 40 per cent grades, the strongest of the year, with choice lots bringing $33. Lead ore remained stationary at $56 to $57 a ton.

Chicago

Chicago, Nov. 13.

New Metals.—The new metal market in the west was very quiet during the past week and price changes were fractional. Tin registered a net advance of ½c during the week, being now quoted 42¼c, Chicago. Spelter is somewhat firmer, while lead remains unchanged and quiet. Copper buying is moderate.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 12¼c; castings, 12¼c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 6.25c; lead, desilverized, 4.20c in 50-ton lots; corroding, 25c per 100 pounds higher, sheet zinc, $8 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 42¼c. Cookson's antimony, 9¼c; other grades, 8¼c to 8¾c.

Old Metals.—The market has relapsed into the inaction which has generally characterized it for many months. Brass foundries seem fairly well supplied with old metal.

We quote the market, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 11c; copper bottoms, 9¾c; heavy cut crucible copper, 11½c; heavy red brass, 10c; heavy yellow brass, 8½c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; lead pipe, 4c; zinc scrap, 4.60c; scrap aluminum, 12c; tea lead, 3¾c; No. 1 pewter, 28c; block tin pipe, 37c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $88 to $90 a ton.

New York

Nov. 14.

Tin.—The London pig tin market advanced £6 on spot, and £2 5s on futures the past week. Supported by the favoring statistical position of the metal, the syndicate appears to meet little opposition in advancing the price, and it is the opinion of some close observers in the local trade that with occasional reaction the price of spot can be put to £200 per ton with little difficulty within the next six weeks. Local dealers have bought rather freely of late, for November and December delivery. Consumers also have been in the market, but only for immediate needs. At the close of business today the metal is offered at 42.90c with 42.70c bid, for spot and November. Arrivals since Nov. 1, aggregate only 240 tons. The afloat is 2,115 tons, of which 1,125 tons were due Nov. 13, but had not been reported arrived to-day.

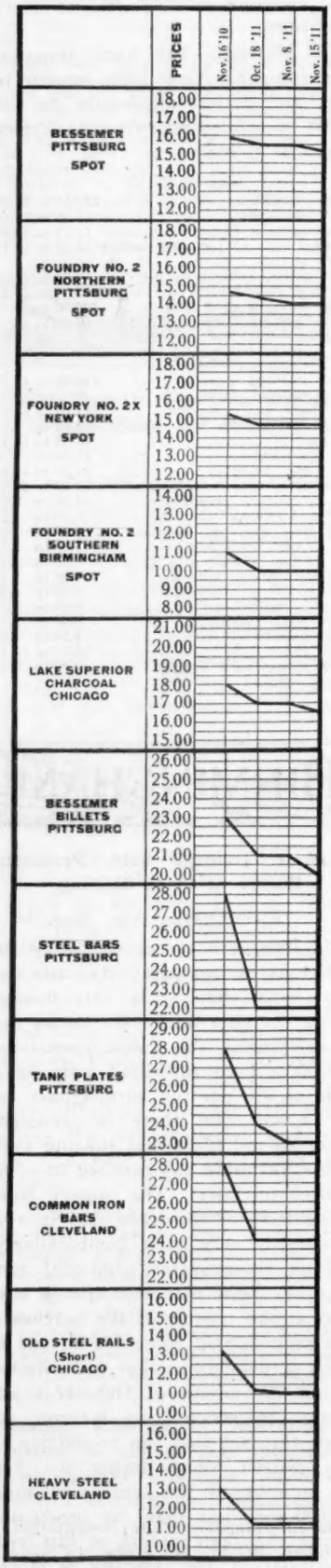
Copper.—The trade was taken by surprise by the favorable copper statistics for October, which showed a decrease in stocks of about 6,000,000 pounds. On the strength of the good showing in domestic deliveries, which were 64,000,000 pounds, a much better sentiment prevails concerning the demand for manufactured goods, and the outlook for future business. The price of electrolytic has advanced to 12.62½c cash New York, and 12.75c delivered, and lake is 12.87½c, with a good demand from foreign buyers. Exports since Nov. 1, are 12,131 tons.

Lead.—While pig lead quotations have not changed, there are indications of greater strength developing, and announcement of an advance by the leading seller is not unlooked for. Outside interests are asking 4.30c in New York, and the American Smelting & Refining Co. continues to quote 4.25c.

Spelter.—The market is very strong on a good demand and pronounced scarcity of the metal for shipment during the next six weeks. Sales were made today on a basis of 6.62½c in New York by a local agent, and it is said more business could be done on the same terms, if stocks at producing plants would permit.

Antimony. — The market is quiet, but is slightly better in tone than for several weeks. Cookson's is 8c, Hallett's is 7.70c and Hungarian is 6.95c.

PRICE CHART



NEW STEEL PLANT

Will be Built by Corrigan, McKinney & Co. at Cleveland.

Cleveland is to have a new steel plant. Corrigan, McKinney & Co. are preparing plans for the building of eight 60-ton open-hearth furnaces on a site of 41 acres on the Cuyahoga river, which has just been purchased. This land lies on the east side of the river, directly opposite the two blast furnaces of the company. Corrigan, McKinney & Co. have two modern furnaces with a combined capacity of about 150,000 tons per year, but owing to the quiet market only one of these stacks has been in operation. The second stack, completed about a year ago, has never been blown in.

The open-hearth plant will make about 1,000 tons of steel per day, and, although the usual amount of scrap will be used, nearly all of the output of the blast furnaces will be required. Mr. McKinney said yesterday that it had not been decided what finishing capacity would be erected, as that would be a matter for future consideration. The plant will, of course, produce billets and slabs, and there will be a blooming mill, but whether any material will be finished to a greater extent remains to be decided.

It is expected that some of the contracts for the new plant will soon be awarded and active work will be started as early as the weather will permit in the spring. The building of this plant represents an important development in the manufacturing of steel along the Cuyahoga river, on which the new plant of the Upson Nut Co. is located.

A. S. M. E. Meeting

The annual meeting of the American Society of Mechanical Engineers for 1911 will be called to order in the Engineering Societies' building, New York, on Dec. 5, and will close on Dec. 8. While the professional program has not yet been announced, it is known that some notable papers will be presented. Important features will be contributions by three of the sub-committees appointed by the committee on meetings: Those on textiles, cement manufacture and machine shop practice. One session will be devoted to foundry practice and another to steam boiler performance, while the subject to be discussed at the regular session of the gas power section is "Oil Engines".

The entertainment features will be in the hands of the committee on meetings in New York. The principal events will be the president's reception on Tuesday evening and the annual reunion of the membership of New York, at the Hotel Astor on Thursday evening. Luncheon will be served as usual on Wednesday and Thursday. The welcoming of the visiting ladies will again be in charge of the ladies of New York, Mrs. Jesse M. Smith acting as chairman. The ladies and their guests will be tendered a reception on Wednesday afternoon.

A number of excursions have been arranged for the members. These will include visits to the S. S. Olympic, which will be in port at New York at that time; the Brooklyn navy yard; the plant of the Sims Magneto Co., Plainfield, N. J.; the Bush terminal buildings in Brooklyn; the plant of the E. W. Bliss Co., Brooklyn, etc.

Receivers Named for Anniston Iron Corporation

Birmingham, Ala., Nov. 15. (By wire.)—The Anniston Iron Corporation, which was incorporated in Virginia in March, 1910, with an authorized capital stock of $600,000, for the purpose of taking over the two blast furnaces of the old Woodstock Iron & Steel Corporation, has been placed in the hands of receivers. The movement was voluntary, being advised by the board of directors. M. P. Maury and J. P. Carington are now in charge of the property as receivers and the furnace will be kept in blast. The total liabilities are placed at $60,000. The president of the Anniston Iron Corporation is H. E. McWane, president and general manager of the Lynchburg Foundry Co., Lynchburg, Va., but it is believed that the Lynchburg interests will not be involved further than the extent of their holdings.

Business Merged.—The Perry-Buxton-Doane Co., Boston, has been incorporated with a capital stock of $850,000 to take over and continue the scrap iron and metal business of Wm. H. Perry Co., of Providence, R. I.; E. Buxton & Son Co., of Worcester, Mass.; Buxton-Doane Co., of Boston, and F. R. Phillips & Sons Co., of Philadelphia. The officers of the company are: President, Wm. H. Perry; vice president, A. L. D. Buxton; treasurer, George R. Doane, and secretary, W. Vernon Phillips.

Pittsburgh Gas Stove & Mfg. Co., Pittsburgh, has filed notice of increase of capital from $5,000 to $100,000. Edward J. Daschbach is secretary of the company.

CAR BUYING

Shows Genuine Interest Among Railroads—Low Prices Are Quoted.

Long deferred needs for rolling stock and other equipment appear to have accumulated to the point where they are forcing the railroads into the market at present more freely than for many months past. The autumn freight movement has been very heavy and has found some of the roads considerably handicapped in having an inadequate number of serviceable cars at their disposal. In addition to the pressure of actual needs, the present level of extremely low prices quoted on freight cars has undoubtedly been an equally effective factor in inducing buying at this time. Recent quotations have been about $750 a car, the lowest that has ruled for several years.

Orders reported in the week show a continuation of the heavy buying by the New York Central system and these lines have recently placed a total of 12,350 freight cars of assorted type. The orders placed by the New York Central lines within the past week include 1,000 additional steel underframe box cars and 1,500 steel hoppers to the American Car & Foundry Co., 2,000 steel underframe box cars to the Pullman Co., 500 flat cars to the Barney & Smith Car Co., and 350 gondolas to the Standard Steel Car Co. The Buffalo, Rochester & Pittsburgh has placed 1,000 steel underframes with the Pressed Steel Car Co., and the Chicago, Milwaukee & St. Paul 1,000 steel underframes with the Bettendorf Axle Co. The Cambria & Indiana railroad has given 300 hoppers to the Cambria Steel Co., and the same builder has 200 to 300 tank cars for the Sun Oil Co. The Lehigh Valley railroad has divided an order for 25 steel passenger and baggage coaches between the Pullman Co. and the Barney & Smith Car Co.

In prospective purchases, the directors of the Chicago & Northwestern have authorized the purchase of 3,300 freight cars and 75 locomotives. The Baltimore & Ohio railroad continues in the market for 4,500 cars and the Delaware, Lackawanna & Western and other roads are considering important purchases.

A strike against all plants of the American Locomotive Co. has been declared by J. Franklin, of Kansas City, president of the International Boilermakers' and Helpers' union, following the recent trouble at the Dunkirk, N. Y., plant.

SURPLUS EARNED

By Colorado Fuel & Iron Co. Makes Excellent Showing.

The nineteenth annual report of the Colorado Fuel & Iron Co., being for the year ending June 30 last, contains a number of interesting statements respecting the company operations. After providing for all fixed charges, etc., a surplus of $1,259,672.24 was carried to the credit of profit and loss. Gross earnings from operations were $22,934,685.19, a decrease of $705,127.89, or 3 per cent compared with the previous year; operating expenses, $19,456,335.96, a decrease of $440,861.97; and net earnings from operation, $3,478,349.23, a decrease of $264,265.92; income from sources other than operation, $671,599.20, making a net income of $4,149,948.43, this being $219,586.21 less than the previous year.

In his report, President J. F. Welborn says:

The year commenced with promise of better coal business than had previously been enjoyed by the company, but an unusually mild winter and the extreme drought in the agricultural states west of the Missouri river during the season of 1911 caused a lighter demand for Colorado domestic coal in the first half of that calendar year than has been known in a similar period in the last decade, with the result that our coal production fell off 489,076 tons, and earnings from fuel sales decreased $274,696.23. This decrease in earnings would have been overcome by the more efficient management that ruled in both producing and selling divisions of the fuel department but for the disastrous coal mine explosions that occurred in January, 1910, and October, 1910, most of the expense of which was born by last year's business, and all of which had been paid and charged to operating expenses prior to July 1, 1911.

The iron department shows an increase of $170,832.09 in gross, and $10,430.31 in net earnings, with prices on all products except rails much lower than for many years. Had the higher prices of the previous year been secured, the net earnings from the sale of iron and steel would have shown an increase of at least $250,000, due to lower costs of ore and steel; or, with selling prices that obtained prior to the panic of 1907, an additional $1,000,000 would have been earned.

Had we escaped the two coal mine explosions, and in other respects experienced as favorable conditions as during the previous year, the surplus might well have been $2,000,000. It may, therefore, be said that, considering the unfavorable conditions, which the management could neither have foreseen nor prevented, the results from the year's operations were more favorable than in any previous year of the company's history.

The iron ore mined in the year amounted to 841,699 tons, a decrease of 37,931 tons; pig iron produced, 397,701 tons, an increase of 12,099 tons; limestone quarried, 425,704 tons, an increase of 18,287 tons; finished iron and steel, 424,421 tons, an increase of 11,672 tons; total coal mined, 4,233,756 tons, a decrease of 489,076 tons; coke manufactured, 753,192 tons, a decrease of 152,407 tons.

The consolidated balance sheet of the Colorado company and its various subsidiaries, based on the appraisement of property as of June 30, 1911, and June 30, 1910, follows:

ASSETS.

	1911.	1910.
Iron ore, limestone and other lands	$56,752,194	$57,650,115
Equity at steel plant, coal mines, etc.	28,537,251	28,082,010
Railroads	5,829,192	5,854,000
Cooperage plant	30,576	34,037
Telegraph system	54,300	.....
Timber lands, franchise, building, etc.	40,112	36,184
Store buildings, lots and equipment	409,800	389,628
Inventories	3,910,341	4,033,465
Accounts and bills receivable	2,945,604	3,195,901
Cash on hand	3,846,539	2,683,951
Stocks and bonds	287,811	238,958
Cash held by trustees	29,151	16,349
Reserve funds	99,841	99,840
Accrued interest on securities	11,001	6,077
Payment of royalties in advance	48,893	37,720
Total	$102,832,608	$102,358,240

LIABILITIES.

Capital stock	$36,235,500	$36,235,500
Funded debt	42,521,123	42,725,000
Accounts payable, pay roll, etc.	1,754,269	1,908,629
Accrued bond interest, not due	862,057	862,746
Accrued taxes, not due	113,500	113,500
Excess of assets over liabilities	21,346,159	20,512,865
Total	$102,832,608	$102,358,240

Lower Pig Iron Rates Favored

A meeting was held at Birmingham, Ala., on Nov. 9, at which practically all of the southern furnaces were represented as well as a number of selling agents. This meeting was called for the purpose of placing before the railroads, the question of a reduction in rates on pig iron, particularly during such time as the present low prices obtained. The feeling of those present was that concerted action should be taken in the matter, the plea being that with iron at present prices rates were too high in comparison.

W. J. Brand was elected treasurer of the Pittsburgh Foundrymen's Association at the regular meeting which was held in Pittsburgh, Nov. 6, to succeed the late John McLaren, formerly president of the Phillips-McLaren Co., who died Oct. 14.

HEARINGS COMPLETED

By Michigan Tax Commission on Ore Mines—F. E. Bell's Views of Taxation.

The Michigan state commission of tax inquiry has completed its hearings on the proposed corporate excess tax and is preparing its final report. The Upper Peninsula mining interests were represented by Frank E. Bell, of the United States Steel Corporation, and William P. Belden, of the Cleveland-Cliffs interests.

In the course of his argument against any further increase in the tax on iron mining properties, Mr. Bell was assured by members of the commission that they believed these holdings, as assessed this year by the tax commission, were on at full value so far as their tangible properties are concerned. Mr. Bell said that in fairness to the mine owners, the people should be advised of this by the commission, as in some cases the assessments are above cash values of the mines.

Mr. Bell argued against the proposition that, because of the belief that the iron ore supply is being depleted annually, the state is entitled to collect a higher tax than from other property. On the strength of the Finlay report, he said, the mines are already taxed by the state on a profit earning basis, and he showed figures of the increase in assessments this year,—in Ishpeming county from $4,831,000 to $12,487,000; and in Negaunee from $4,281,000 to $7,673,000. In the latter case this means an increase in taxes from $115,000 to $209,000, despite a drop in the rate from $3.30 to $1.80.

"We are now assessed at our full value of intangible and tangible property," said Mr. Belden, who contended that any proposal to tax the mines higher than other property was unfair and discriminatory. He favored a separation of state and local taxes, suggesting the railroad taxes to support the former, and pointed out the several fallacies and inequalities in the suggested methods of taxing iron ore properties.

Among recent sales made by the Alliance Machine Co., the following are reported by the New York office, at 42 Broadway: One 25-ton crane to the Harlan & Hollingworth Corporation; one 100-ton press to the General Electric Co., Lynn, Mass., and a crane to the Wright Wire Co., Worcester, Mass.

WORKS COMPLETED

By Union Steel Casting Co.—Banquet in Celebration.

The Union Steel Casting Co., Pittsburgh, has completed the erection of a new plant on Butler street, between Sixty-first and Sixty-second streets, Pittsburgh. The new plant adjoins the old plant and practically doubles the capacity. The cost of the new plant, including real estate, represents an investment of about $700,000. The company makes a general line of steel castings of every description up to 80,000 or 100,000 pounds. The new plant likely will be started within the next three weeks.

A dinner was given Saturday evening, Nov. 4, to celebrate the completion of the new works. C. C. Smith, president of the company, presided, and Col. S. H. Church, vice president, presided as toastmaster. The guests included the officials and directors of the company and the office force. The dinner was served in the storage room, which was appropriately decorated for the occasion. Informal speeches were made by C. C. Smith, S. H. Church, George W. Eisenbeis, treasurer; J. P. Allen, secretary; J. B. Henry, superintendent of construction; William Laub, sales agent; Daniel J. Evans, superintendent; John Toole, shop foreman, and Judge William P. Potter, of the supreme court of Pennsylvania. The directors and shop officials presented Mr. Smith a diamond watch fob.

New Shaft Raised at Rolling Mill Mine

A new shaft is being raised at the Rolling Mill mine of the Jones & Laughlin Steel Co. near Negaunee, Mich. It will reach the surface a few hundred feet south of the old shaft and will be equipped with a new steel shaft-house, engine-house and hoisting machinery. There is now only about 600 feet between the top of the raise and the surface and it is expected that the work will be finished before spring. The Jones & Laughlin interests have also recently awarded a contract for the erection of six dwelling houses at the site of a mine the corporation is to develop near Iron river on the Menominee Range.

Interesting Paper.—J. G. Butler Jr. read an interesting and carefully prepared paper before the Up-to-Date club of Youngstown, O. a few nights ago on "Legislative Investigations and Their Influence Upon Business." He took the ground that they have uniformly been disturbing and in a vast majority of cases could be dispensed with without loss to the country. As one of the so-called independents he defended the Gary dinners and declared they made for business stability without establishing a price agreement.

Chicago Steel Foundry Co. To Build

The Chicago Steel Foundry Co., David Evans, Rookery building, president, has purchased 23 lots at the southwest corner of Kedzie avenue and Thirty-seventh street, Chicago, for a new plant. The tract is 226 x 298 feet with an east frontage running from Thirty-seventh place through to Thirty-seventh street, and from Kedzie avenue to the Chicago & Alton railway. Plans are being prepared for a new foundry building 200 x 150 feet in size and a two story combined office building and pattern shop. The two buildings are expected to cost about $50,000. Raeder & Wood, Chicago, are the architects.

The Chicago Steel Foundry Co. now operates a large crucible steel plant and will move its crucible equipment, which has a capacity of eight tons per day, from the old shop into the new one. Some additional equipment is planned, however, including converters for the production of Bessemer steel castings.

Has Incorporated

The Woodward Iron Co., Birmingham, Ala., has been incorporated in Delaware with a capital stock of $13,000,000. The incorporators named in the preliminary papers are Robert Jemison Jr., R. H. Baugh and T. H. Benners, of Birmingham, and E. E. McWhinney, of Wilmington, Del. Strong intimations are made in Birmingham daily papers of recent date that the Woodward company contemplates erecting a steel plant near its blast furnace site at some future time.

The foundry of the Missouri Malleable Iron Co., East St. Louis, was damaged last Saturday to the amount of about $10,000 by a high wind which blew off several roofs.

The Norton Co., Worcester, Mass., has distributed to the trade a calendar of novel design, covering the year ending November, 1912.

LOWER FREIGHT RATES

Urged by Senator Oliver on Iron Ore From Lake Ports to Furnaces.

Pittsburgh, Nov. 13.—In an open letter to F. R. Babcock, president of the chamber of commerce, Pittsburgh, United States Senator George T. Oliver outlines a plan for furthering Pittsburgh's progress as an industrial center and, among other things, urges the Pittsburgh chamber of commerce to join in the campaign for lower freight rates on iron ore from lake ports to the furnaces.

Senator Oliver said in part:

We are compelled to transport our ore from the lower lake ports to our furnaces, for which we pay the railroad a net rate of 96 cents a ton on direct shipment and $1.04 per ton on shipments from the docks. Now, 96 cents per ton of ore of average composition means at least $2 per ton of pig iron, and, allowing for waste in converters and mills, not less than $2.50 and possibly $3 per ton of finished steel. Eliminate this handicap and we can beat the world in steel manufacture. Its total elimination is, of course, impossible, for we cannot expect railroads to haul ore 140 miles for nothing; but I think I can show you how it can be greatly lessened, with little ultimate loss to the railroads and to the enormous and lasting advantage of the Pittsburgh district.

The railroads' charge of 96 cents is the net return for transportation, exclusive of all dockage and terminal charges. This rate could be cut in two and still leave a fair margin of profit.

If the rate were reduced to 50 cents, the cost would still be only 57 per cent of the gross revenue, and on the basis of ordinary railroad calculations, the traffic would yield a fair profit. But suppose we figure on a rate of 60 cents per ton,—more than double the cost. This would mean a saving of at least $1 a ton on all steel made in the Pittsburgh district—and such a saving, combined with our other advantages, would make Cleveland, Lorain, Gary and South Chicago sit up and take notice.

The increased tonnage which would inevitably follow the reduced cost of steel would still further lower the cost of transportation, and the outward haul of finished products at remunerative rates would overcome the deficiency caused by the reduced ore rate.

Southern Pig Iron Stocks

Pig iron stocks on Alabama furnace yards on Nov. 1, 1911, as compared with Oct. 1, 1911, were:

		Decrease.
Foundry stocks held by furnace companies	132,871	8,552
Warrant stocks	61,200	1,400
Basic stocks	17,221	856
	211,292	10,808

A decrease of 10,808 tons or practically 0.05 per cent.

CONFLICTING REPORTS

Concerning Purchase of Basic by American Steel Foundries.

Pittsburgh, Nov. 15. (By wire.)—Many conflicting statements have been circulated regarding the purchase of basic pig iron by the American Steel Foundries for first half delivery. What is considered the most reliable information is that the company has closed for a total of approximately 25,000 tons. Of this amount, 12,000 or 15,000 tons will be shipped from valley furnaces to the Alliance, O. plant, the price being approximately $12.90, delivered. Four or five furnaces have freight rates to Alliance varying from 50 to 65 cents. The company is understood to have purchased upward of 10,000 tons for the East St. Louis and Granite City, Ill., plants, this iron to come from the lake district furnaces.

A Pittsburgh consumer has closed for 100 tons of Bessemer pig iron for prompt shipment. Three bids of $14, valley, were made on this inquiry.

Southern Railway Co. Orders Cars

Washington, Nov. 15. — President Finley of the Southern Railway Co. announced today that the company has contracted for 1,700 all-steel 50-ton double drop bottom gondola coal cars, 500 steel underframe 30-ton ventilated box cars, and 250 all-steel 50-ton flat cars.

These additions to the freight equipment of the company are all in addition to the purchase just consummated of seven Mikado engines, 600 all-steel coal cars, and 65 steel underframe box cars for the Virginia & Southwestern Railway Co.

Personal

Louis Brown has been elected president of the Oil Well Supply Co., Pittsburgh, to succeed the late John Eaton.

Edgar Brosius, Machesney building, Pittsburgh, has been appointed local representative of the Orton & Steinbrenner Co., Chicago.

G. W. Kneisly, formerly with the Chicago office of the Edgar Allen American Manganese Steel Co., has become identified with the Cleveland office of the Lackawanna Steel Co.

D. R. Wilson has resigned as vice president and general manager of the Diamond Forging & Mfg. Co., Pittsburgh, to become effective Dec. 1.

John D. Ryan, president of the Amalgamated Copper Co., has been chosen a member of the executive committee of the Copper Producers' Association, succeeding U. G. Broughton, resigned.

O. O. Laudig, who, until recently, was connected with the Algoma Steel Co., Sault Ste. Marie, Ont., is now superintendent of the blast furnaces of the Tata Iron & Steel Co., Lakchi, Bengal-Nagpur railway, British India.

Philip and Frederick Frankel, Cleveland, announce that they are engaging in the practice of law, under the firm name of Frankel & Frankel, 310 New England building. Philip Frankel has long been identified as secretary with various associations of manufacturers and business men in Cleveland, and will retain these connections.

E. R. Buckley has opened an office at 1364 Peoples Gas building, Chicago, as a consulting mining geologist and engineer. Mr. Buckley spent three years with the Wisconsin geological survey, seven years as director of the Missouri bureau of geology and mines, and has just completed four years professional service as a mining expert.

Obituary

Andrew F. Burnett, manager of the Chicago branch of the Detroit Stove Works, died Nov. 2, aged 63.

Charles Lindemann, for many years prominently identified with the stove and iron foundry business in Milwaukee, Wis., died after a long illness, aged 53.

Charles Rea, aged 88, one of the founders of the firm of Robinson, Rea & Co., died Nov. 9, at the family residence, Pittsburgh. Mr. Rea was with the Pennsylvania railroad for some years and at the close of the Civil war became identified with the old-time foundry and machine company.

C. L. Rice, aged 89, of Chicago, one of the oldest and most efficient members of the selling force of the Dodge Mfg. Co., and a pioneer in the mill supply business, died on Nov. 3, in Chicago, as a result of an accident in which he was run over by a team of draft horses on Nov. 2.

William B. Kerr, aged 63, of North Tonawanda, N. Y., who had been superintendent of the blast furnace of the Tonawanda Iron & Steel Co., at that place, died at his residence there on Oct. 28 of heart disease. He was formerly superintendent of the Isabelle furnaces of the Carnegie Steel Co., at Pittsburgh.

Henry Wheeler Buckley, a mechanical engineer and inventor, died at East Orange, N. J., Nov. 7, at the age of 70 years. He was an engineer in the civil war under General Robert E. Lee. Later he invented the Buckley condenser and other appliances for steam engines. He was a member of the American Society of Mechanical Engineers and other technical organizations.

John McMurdie Warner, who founded the branch houses of Rogers, Brown & Co. at Philadelphia and Pittsburgh, died suddenly at Overbrook, Pa., near the former city, Nov. 11. He had retired to his room on Friday night apparently in his usual health and was found dead by a servant the next morning. Death is ascribed to heart disease. Up to his retirement eight years ago, Mr. Warner was one of the best known pig iron men in the Philadelphia district. He came to that city in 1890 from Cincinnati, where he had been associated with Rogers, Brown & Co., and opened the Philadelphia branch office under the name of Rogers, Brown & Warner. Later he established at Pittsburgh a branch agency of Rogers, Brown & Warner. Mr. Warner disposed of his interest in the firm and retired in 1903, and the title of these offices was then changed to Rogers, Brown & Co. He was succeeded at Philadelphia by C. H. Zehnder, who in turn was followed by the present manager, Noah H. Swayne, 2nd.

Mr. Warner was a native of Chillicothe, O., having been born there in 1858. Burial was made at Chillicothe. Since his retirement from business Mr. Warner had traveled extensively.

August Marx, general manager of the Philadelphia Roll & Machine Co., died unexpectedly, Nov. 6, at his late residence in Philadelphia. Mr. Marx had been in poor health for some time. He was born at Bad Homburg, Germany, in 1857, and left home at the age of 13, taking passage on a sailing vessel as cabin boy, and after sailing the seas the world over for three years, landed in New York, whence he drifted to Philadelphia. In 1880, he became connected with the Lombard & South Streets Passenger Railway Co., becoming superintendent of the Passyunk division of that system. On consolidation of the Lombard & South with the Frankford & Southwark Passenger Railway Co., in 1891, he resigned. In 1892, he became connected with William Wharton Jr. & Co., Inc., assuming the superintendence of materials for the construction of the Third Avenue Railroad Co. of New York City. At the time of the formation, in 1895, of the Philadelphia Roll & Machine Co., a subsidiary of the Wharton Co., he severed his connection with the parent company and joined the new one, becoming its general manager, which position he held until his death.

The Use of Compressed Air in a Boiler Plant

Air Equipment in the Works of the Kewanee Boiler Co., with a Description of the Sullivan Compressor

The boiler department of the Kewanee Boiler Co., Kewanee, Ill., is devoted principally to the manufacture of wrought iron and steel boilers for heating large buildings, apartments and dwellings and to the construction of power boilers and tanks of moderate size. The company has recently completed extensive improvements to this department of its works, which embrace a number of interesting features.

The plant is situated on the main line of the Chicago, Burlington & Quincy railroad and occupies a total area of 16½ acres, of which seven acres are under roof. Some idea of the output of the boiler department may be obtained from the fact that the equipment is sufficient to turn out a finished boiler every 20 minutes when operating at full capacity.

One of the principal features of the shop is the extensive use that has been made of compressed air. Air is used not only to operate pneumatic riveters, hammers, etc., in accordance with standard boiler shop practice, but is also very largely employed in handling materials, in hoists and in special tools.

It is a matter of comment that in many plants great pains have been taken to obtain the latest type of air tools and to devote considerable thought to the economical use of air, while at the same time most wasteful and inefficient compressors are installed. The demand for air at the shops of the Kewanee Boiler Co. is so large that the management early realized the necessity of adopting the most efficient type of compressing apparatus. Accordingly when the recent improvements to the plant were undertaken, a tandem compound compressor of the Corliss type was installed for the purpose of supplying the bulk of the compressed air used throughout the shops.

Compressor Equipment.

The compressor was built by the Sullivan Machinery Co., Chicago, and is a new design embodying a number of interesting features.

Fig. 1 shows the steam end of the machine with the valve gears and governor and Fig. 2 shows the air end, including the inter-cooler. The compressor consists of a tandem compound steam engine equipped with full Corliss valve gear on both high and low pressure cylinders, connected to and operating the two stage air cylinders, which are mounted on a frame together with the fly wheels. In air compressor practice the demand for air and the steam pressure vary constantly, and the Corliss valve gear with its automatic dash pot cut-off under the control of the engine governor meets these conditions with great efficiency.

Two types of compound air compressors are in general use, tandem and duplex. As long as the steam cylinders are properly proportioned to the boiler pressure and to the work to be done there is no difference in the economy of either type but the tandem compressor has certain advantages of construction. The two steam cylinders are located only a short distance apart, varying from 18 to 24 inches, and as admission of steam takes place in both cylinders at the same time no receiver is necessary, but merely a straight pipe leading the steam directly from the high pressure to the low pressure cylinder. Storage of steam between the two cylinders is unnecessary. The tandem type also avoids the duplication of certain heavy parts such as frames, cross-heads and bearings and is, therefore, somewhat less expensive to build.

The compressor at the plant of the Kewanee Boiler Co. has a displacement capacity of 2,450 cubic feet of free air per minute, the terminal air pressure being 100 pounds per square inch. Both air and steam ends are compounded, the diameter of the

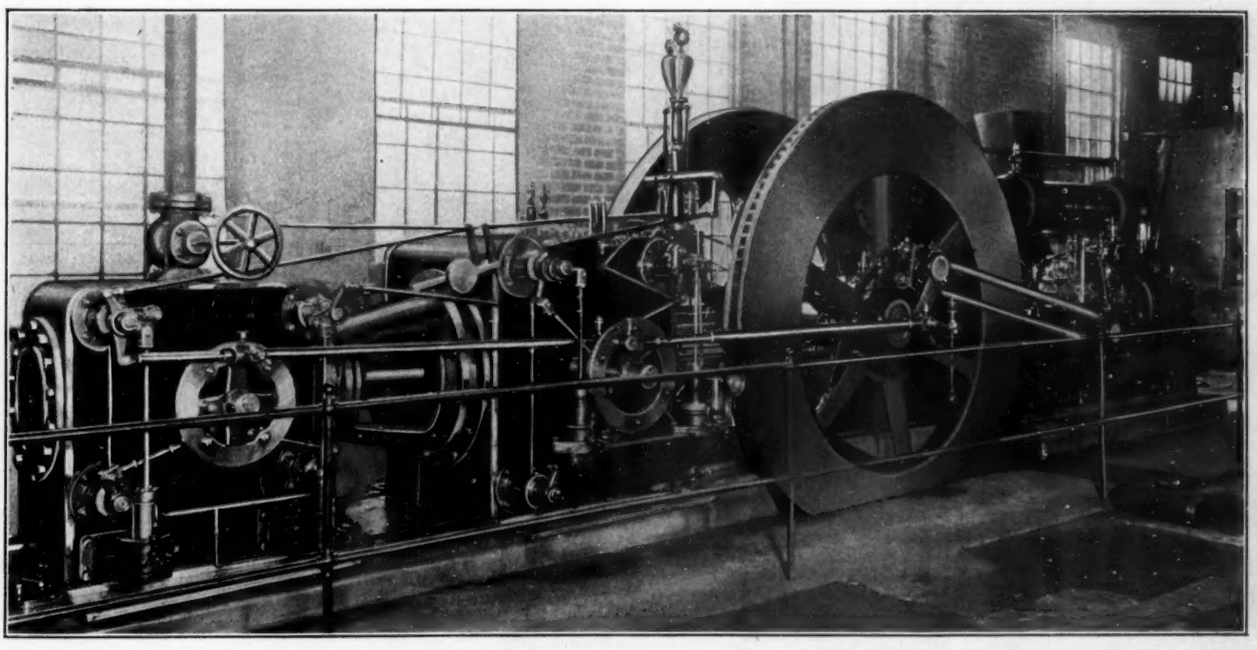


FIG. 1—STEAM END OF SULLIVAN AIR COMPRESSOR

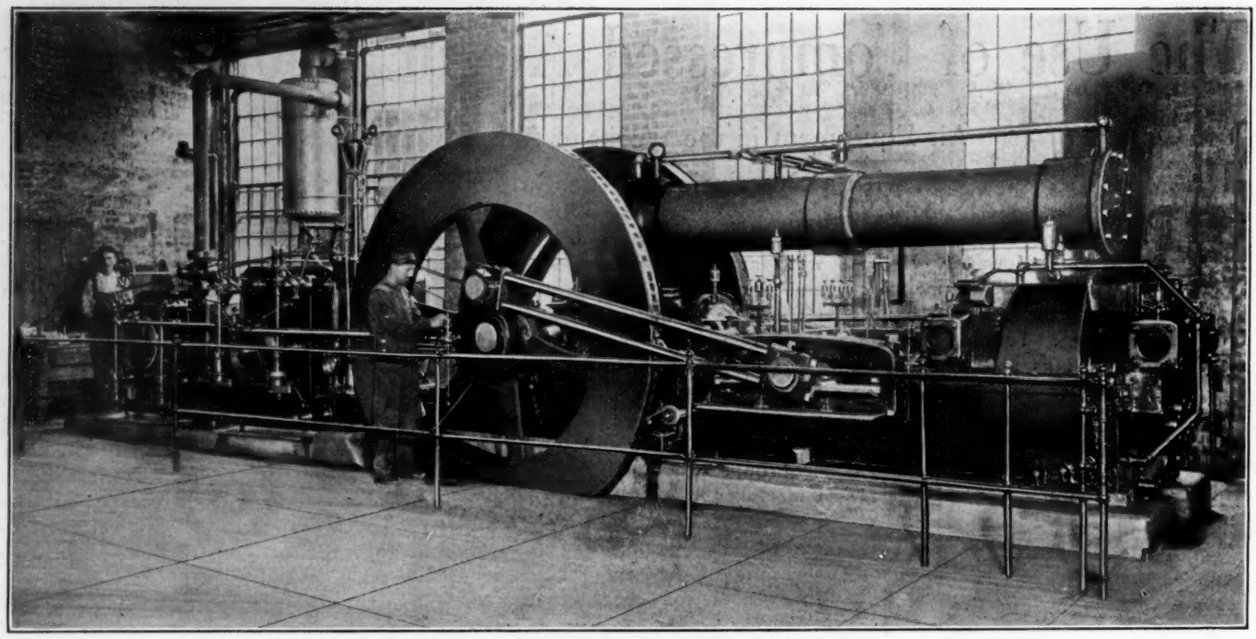


FIG. 2—AIR END OF SULLIVAN AIR COMPRESSOR

steam cylinders being, respectively, 20 and 34 inches and of the air cylinders, 18 and 30 inches, with a common stroke of 30 inches. The compressor operates non-condensing and the initial steam pressure is 125 pounds per square inch. At 100 revolutions per minute the indicated horsepower of the steam cylinders, with 100 pounds terminal air pressure, is 425. The extreme dimensions of the compressor are length, 33 feet, 6 inches, and height, 8 feet, 10 inches. The fly wheels are 120 inches in diameter; the steam inlet is five inches in diameter; the exhaust is 12 inches and the air discharge is seven inches.

The steam cylinders are cast of semi-steel and the high pressure cylinder is rigidly connected to the front of the low pressure cylinder by means of a stiff, conical distance piece. It is made in halves and may be removed without disturbing either cylinder. The piston rods for all four cylinders are so designed and connected that each piston may be adjusted for clearance independently of the others.

Speed and Pressure Governor.

An improved, sensitive, speed and pressure governor controls the dashpot cut-off. It is provided with an oil cushion and an automatic device which will stop the compressor immediately in case the governor belt breaks. It is of sufficient size to control the steam admission to both cylinders and permits running the compressor as slow as seven revolutions per minute, should the demand for air be irregular. When the speed of the compressor reaches a point at which the air supply exceeds the demand, the speed element of the governor slows down the machine. Also when the air pressure exceeds the point at which the pressure element is set to act, this element operates to reduce the speed of the compressor. The two elements of the governor, therefore, act in unison to maintain the speed of the compressor at its most economical point.

The compressor is started by throwing the valve gear of the high-pressure cylinder by hand. For convenience in turning the machine over in setting valves, etc., a hand lever and pawl are provided, engaging a rack on one of the fly wheels.

On the air end the jacket is formed by forcing a separate liner into the main cylinder by hydraulic pressure, instead of casting the cylinder in one piece with the water jacket cored out.

The inter-cooler consists of a cast iron shell mounted on the air cylinders, as shown in Fig. 2 and in section in Fig. 3. The interior is filled

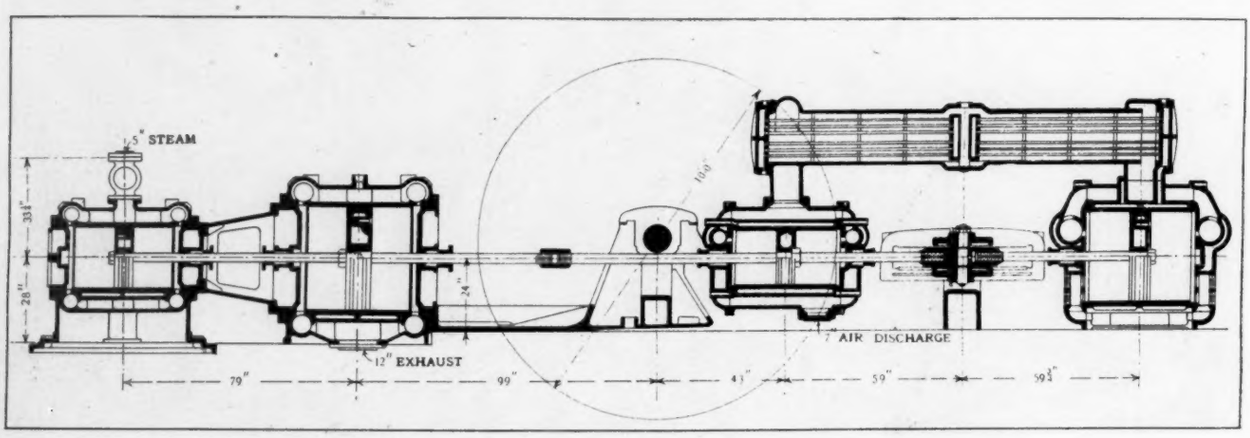


FIG. 3—CENTER SECTION OF SULLIVAN AIR COMPRESSOR, SHOWING INTER-COOLER

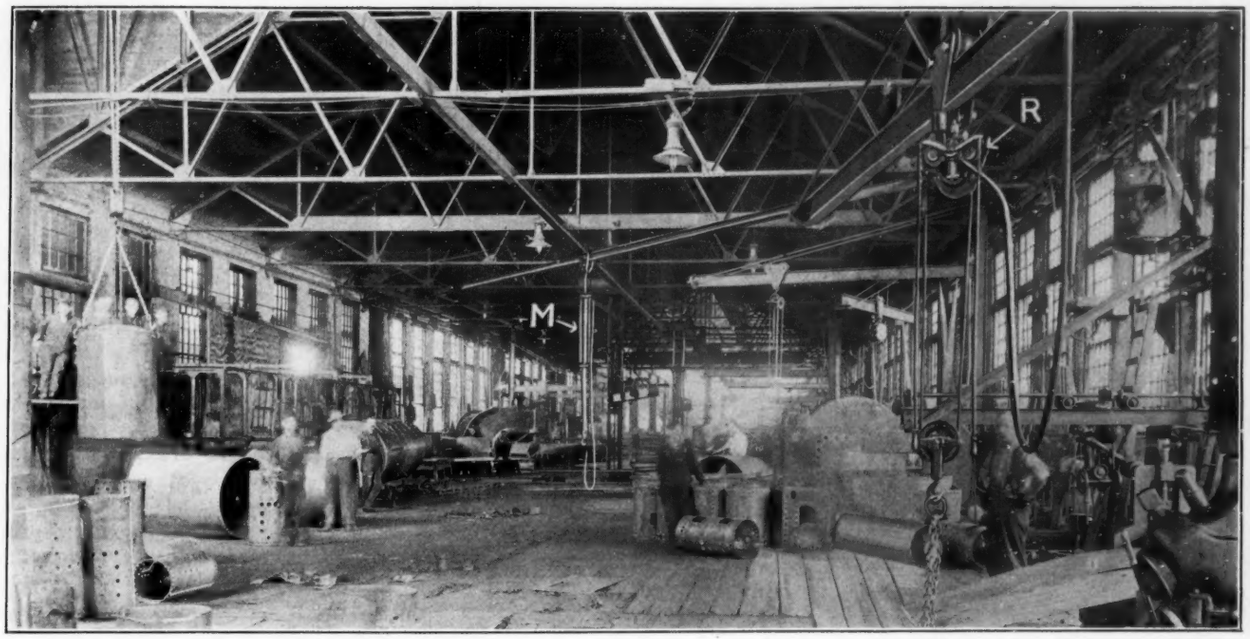


FIG. 4—PUNCHING AND SHEARING BAY OF THE MAIN BOILER SHOP OF THE KEWANEE BOILER CO.

with two nests or groups of copper tubes through which the cooling water circulates. Suitable baffles placed inside the shell, break up the straight flow of air, causing it to come thoroughly in contact with the tubes, in order that as much heat may be taken away from it as possible before entering the high pressure cylinder. The inter-cooler shell is so arranged that by removing the heads, either of the two nests of tubes may be drawn out for repairs or cleaning. The tubes are expanded into the tube heads at each end, obviating the use of gaskets. In order to take care of the variation in the length of the tubes, due to contraction and expansion under the influence of heat, the inter-cooler is arranged so that the outer tube head of each nest is firmly bolted to the shell while the other head is free to move.

Water Circulation.

The water circulation is divided, a separate branch supplying each cylinder and the adjacent section of the inter-cooler. A special cock enables the flow of water in each branch to be regulated so that a proper quantity will be furnished to each half of the system. The cooling water first passes upward through the cylinder jackets, thence upward to the inter-cooler tubes which it traverses three times before being discharged at the top of the chamber. By this system of circulation all the air is carried away and the entire cooling surface made effective.

The valve gear of the air cylinders is so arranged that the valves are fully open at midstroke, when the piston is traveling at its highest speed, and remain at rest or nearly so, so that the cylinder will be filled with

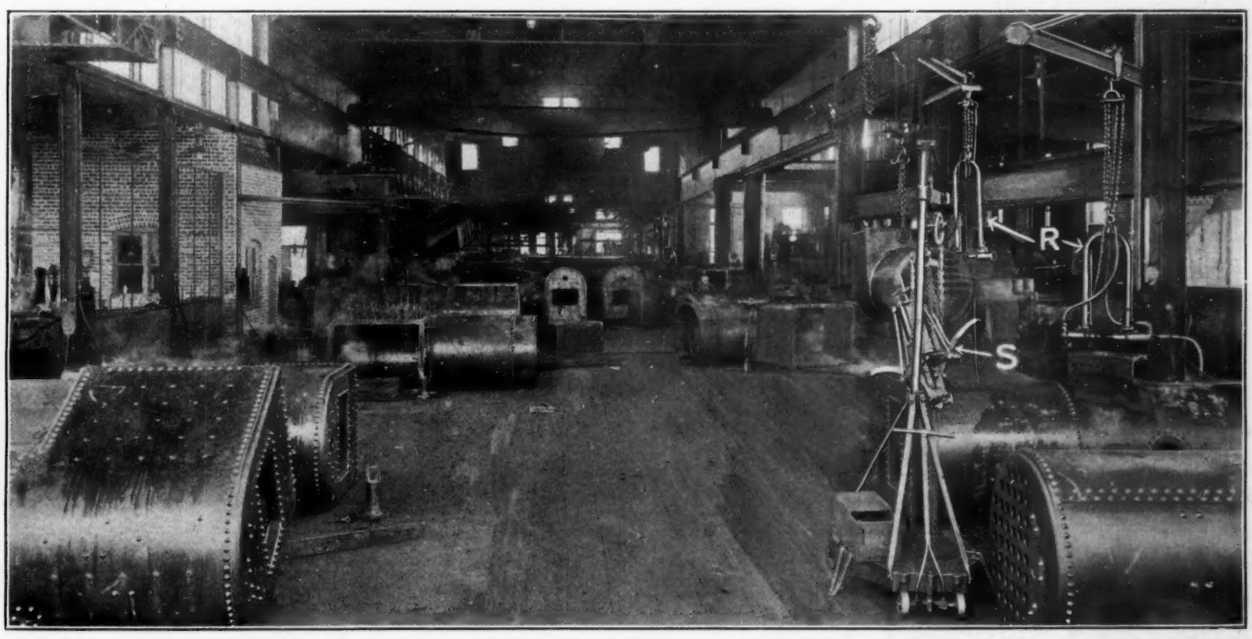


FIG. 5—ANOTHER VIEW OF THE BOILER SHOP, SHOWING THE DEPARTMENT FOR RIVETING STAYBOLTS

FIG. 6—FINISHING AND ASSEMBLING BAY

air at practically the full barometric pressure.

As will be seen from the illustrations, the fly wheels are of unusual size and weight in proportion to the dimensions of the compressor. The arms and the part of the rim adjoining them are cast from open-hearth steel and heavy cast iron rims are shrunk onto the steel rims and keyed to them, to secure the proper fly wheel effect. The diameter of the fly wheels is 10 feet.

The compressor discharges into two receiving tanks, each 16 feet in length and four feet in diameter, provided with a cock for drawing off the water which collects in the bottom.

Steam is supplied to the compressor by five Kewanee horizontal return tubular boilers rated at 150-horsepower each. The boilers burn Illinois bituminous coal and are hand-fired. These boilers are used to supply steam to several pumps, auxiliary compressors and other apparatus in addition to the large Corliss compressor, which only requires about 250 boiler horsepower.

The Boiler Shop.

The main boiler shop at the Kewanee Boiler Co.'s plant is 336 feet long and 60 feet wide. The shop used for finishing fire-box boilers forms an extension to the main shop, 128 feet long and 122 feet wide; the total length of the main aisle is, therefore, 464 feet. A side bay, 224 feet long and 60 feet wide, used for finishing cylindrical power boilers, extends at right angles to the main shop. This bay also contains the hydraulic testing apparatus. The main aisle is served by two 10-ton Northern cranes fitted with 5-ton auxiliary hoists and the side bay is equipped with 15-ton Northern cranes. The shop is lighted by Lupton sash, the walls being practically all glass.

The plates enter the shop from the storage room at the eastern end and the equipment is so disposed that the successive operations come in regular order, the product moving along steadily toward the western end where the finishing operations are performed.

The flanging department is a separate building and is equipped with one 200-ton hydraulic flanging press and one 50-ton press, together with air hoists for handling materials. It is located in a separate building adjacent to the main boiler shop.

Fig. 4 is a view of the punching and shearing bay and gives some idea of the purposes for which compressed air is used in this plant. Each machine is provided with a jib crane of suitable radius, equipped with a rotary air hoist as shown at *R*, Fig. 4, while the various parts of the shop are connected by a mono-rail system provided with air hoists as shown at *M*, Fig. 4. The rotary hoists were furnished by the Detroit Hoist & Machine Co., Detroit.

The plate storage room is adjacent to the punching and shearing end of the shop. It is 208 feet long and 38 feet wide, equipped with a 3-ton Northern electric traveling crane. The crane carries a lifting magnet, furnished by the Electric Controller & Mfg. Co., Cleveland, by means of which the plates are removed from the piles and placed on the transfer car which carries them into the shop. The use of the lifting magnet permits the plates to be stored in flat piles, instead of on edge, which greatly increases the capacity of the warehouse. About 4,000 tons of plates are carried in stock.

In the punching and shearing department are two punches with spacing tables 40 feet long, one heavy Hilles & Jones punch capable of forcing a two-inch hole through 1½-inch plate, a flue punch, bevel shears, plate planer, etc., each tool being provided with air hoists as previously described. The punching and shearing machinery is extra heavy, having capacity 50 per cent in excess of what would ordinarily be considered sufficient for the kind of work handled.

The boiler plates are rolled in a set of 10-foot rolls after which they are bolted together and the punched holes are reamed. Air reamers are used throughout. After being bolted and reamed, the boilers are carried to the riveting bay where the shell plates

FIG. 7—A VIEW OF THE FOUNDRY, SHOWING THE AIR HOISTS

are securely riveted together. The riveting bay is equipped with five hydraulic riveters with gaps varying from 10 feet, 6 inches to six feet. A 10-ton traveling crane handles the boilers to and from the riveters.

Finishing Department.

After leaving the riveters, the firebox boilers are carried to the west end of the shop, where the staybolts are set and the finishing operations performed. This department, shown in Figs. 5 and 6, is a large user of compressed air. The air mains are led along behind the crane rails and branches are taken off at each post as shown at *B*, Fig. 6. This shows the small water separating tanks which are placed at the end of each branch main, and indicates the general arrangement of the compressed air using equipment. A great deal of air is used in the staybolt cutters, *S*, Fig. 5, and in the staybolt upsetters or riveters, *R*, Fig. 5.

Both of these tools have interesting features. The cutter is made by the Helwig Mfg. Co., St. Paul, Minn., and consists of an air cylinder fitted with a piston to which the cutter head is attached. There are two knives which form a set of shears actuated by the air piston. The machine is portable, being suspended by a chain on a small truck, as shown in the illustration. The staybolt upsetter was furnished by the Chicago Pneumatic Tool Co., and is also a portable tool. It is so constructed that it is placed over the water leg of the boiler, upsetting and riveting both ends of the staybolt at one operation.

In addition to its boiler shop, the Kewanee Boiler Co. operates a completely equipped tank shop, provided with two hydraulic riveters, suitable punches, rolls and other machinery for the manufacture of small tanks and heaters. A large gray iron foundry is devoted to the production of miscellaneous castings and a special foundry has also been built for the manufacture of cast iron radiators.

FIG. 9—BOILER TESTING DEPARTMENT

American Society for Testing Materials

At a recent meeting of the executive committee of the American Society for Testing Materials, a resolution was adopted which has been submitted to the members, which provides for holding the next annual meeting prior to April 1, 1912. At the Atlantic City convention a resolution was adopted to hold this meeting in June, but owing to the fact that the sixth congress of the International Association for Testing Materials will be held the following September, in New York City, it has been considered advisable to move forward the annual meeting of the American society.

The vacancy caused by the death of James Christie has been filled by the executive committee by the election of A. A. Stevenson. It was also decided to create local committees on membership in each of the six geographic districts into which the country is divided in the 1911 Year Book, with a view of initiating a comprehensive movement for increasing the membership of the society. The executive committee also subscribed, on behalf of the American Society for Testing Materials, the sum of $5,000 to the international association. In return, every member of the American society will receive a complete report of the proceedings of the 1912 congress and every junior member shall be entitled to a complete report on the payment of $2.50 to the international association.

FIG. 8—KEWANEE BOILERS, READY FOR SHIPMENT

The total capital of Japanese mining companies, exclusive of the capital of private undertakings, amounts nominally to about $94,000,000 at the present time, while in 1905 it was only $48,000,000. The output of all of the principal minerals is rapidly increasing. The increase in the grant of mining leases was 9 per cent in 1910-11 as compared with 1909-10.

A New Process for the Case-Hardening of Steel

Description of a New Furnace of the Vertical Type in Which the Case-Hardening Operation is Greatly Simplified

A new process for case-hardening steel was described by Dr. F. Giolitti, Genoa, Italy, at the recent London meeting of the Iron and Steel Institute. To obtain the best results with the case-hardening agent, the author stated that the following fundamental conditions must be complied with:

1.—The chemical composition of the agent should be absolutely definite and should be accurately known.
2.—The compounds should be as simple as possible.
3.—The reactions which take place during the case-hardening process between the various constituents of the agent and those of the steel should be simple and should proceed rapidly.

These conditions, it was stated, can be realized by the use of case-hardening agents in which along with the carbon monoxide small quantities of hydrocarbons of known composition, or solid carbon in a properly divided state, are allowed to act either throughout the whole period or during only a portion of the case-hardening period. Of these two classes of agents the one based on the simultaneous use of free carbon and of carbon monoxide, is the most suitable for the majority of ordinary applications.

Case-Hardening Furnace.

The type of furnace which has proved to be best adapted to the case-hardening of small and medium sized objects with this mixed case-hardening agent, consists of cylindrical muffles arranged vertically and heated by producer gas. A sectional view of this furnace, showing its general arrangement, is shown in Fig. 1. Inside of each of the refractory muffles is placed a cylindrical retort made of mild steel, which is shown at *A*. The external diameter of this retort is slightly less than the internal diameter of the muffle. Seamless steel tubes can be used to advantage for these retorts. The retort is supported by a flange attached to a frame fixed to the brickwork of the furnace. The device which serves to hold the retort, whether it is being supported by the bottom flange or by the upper flange, is so constructed that it will permit of replacing one retort by another in a very short time. To the bottom flange is attached a cast iron funnel, *B*, which is closed at the bottom by a valve, *Q*. The steel nozzle, *C*, which admits the carburizing gas, passes through an opening in the side of the funnel. The gas is introduced through the tube, *D*, and through the nozzle, *C*. The latter is connected to the hollow cast steel cylinder, *E*, which supports the pieces to be case-hardened by means of the disc, *F*, which consists of a steel plate covered with refractory material. The carbon monoxide, after passing through the hole bored axially in the nozzle, *C*, is delivered into a small distributing device inside of *E*, from which it passes to the case-hardening chamber, *G*, through a number of holes provided in the disc, *F*. During the case-hardening, *E* is supported upon a series of projections on the same lower flange to

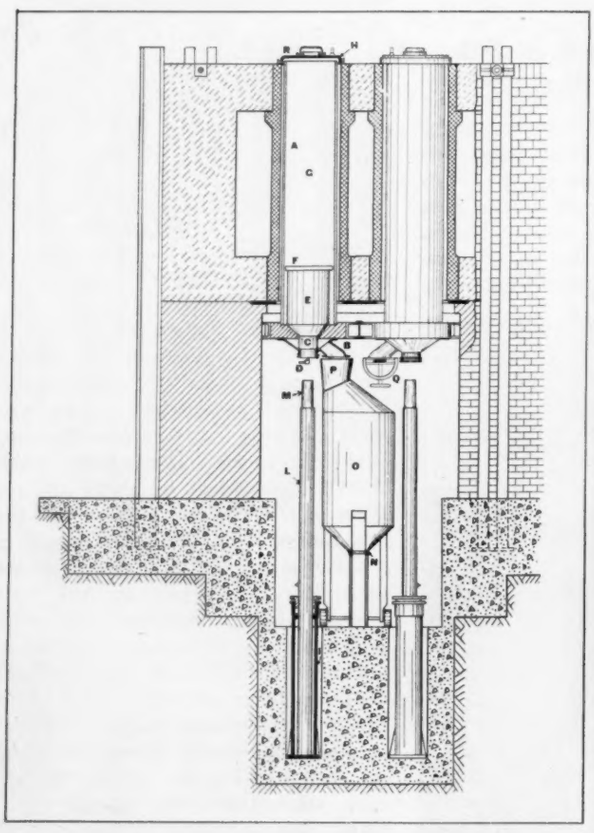


FIG. 1—SECTIONAL VIEW, SHOWING THE GENERAL ARRANGEMENT OF A VERTICAL CASE-HARDENING FURNACE

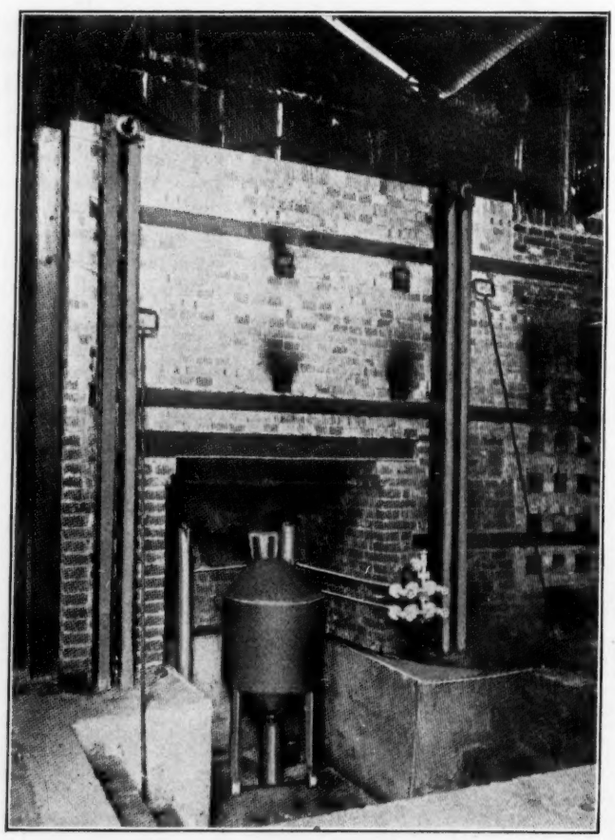


FIG. 2—THE VERTICAL CASE-HARDENING FURNACE, SHOWING A TANK INTO WHICH THE GRANULAR CARBON IS DISCHARGED

which the funnel, *B*, is attached. This ring thus sustains the entire weight of *E*, the disc, *F*, and any articles to be case-hardened, which may be resting directly or indirectly on the disc. Fig. 1 shows the position of the various parts during the case-hardening operation.

Charging the Furnace.

When charging the retort, the tube, *D*, is unscrewed and by means of the plunger, *L*, which is actuated by the hydraulic cylinder, *I*, the parts, *C*, *E* and *F* are lifted, the blunt conical end of the plunger, *M*, engaging these as it rises. This plunger is water-cooled internally to avoid heating in case it should accidentally remain raised inside of the retort for too long a period. When the piston, *L*, has reached the end of its stroke, the surface of the disc, *F*, is only slightly below the cover of the retort. The cover is then removed and the objects to be case-hardened are piled on the disc, *F*. As the objects are piled into the disc, the apparatus carrying *C*, *E* and *F* gradually lowers and the charge is complete when it has reached the lowest possible position, as indicated in Fig. 1. Generally, the articles to be case-hardened are charged at a temperature of about 800 to 900 degrees Cent., and this is a factor of prime importance, as it affects most favorably both the quality of the product and the economy and regularity of the operation.

After charging, the cover is placed on the retort and the bottom discharge pipe, *N*, leading from the iron box, *O*, is passed through the central opening in the cover. This cylinder is filled with a granular carbon, heated to about 900 degrees Cent., which was discharged from the retort after the previous case-hardening operation. This cylindrical box is swung above the muffles, being suspended by a tackle from a swinging arm. After the box, *O*, has been adjusted above the retort, the butterfly valve, which closes the lower end of the opening, *N*, is gradually opened and in a few seconds the entire free space in the retort surrounding the objects to be case-hardened is filled with glowing, granular carbon. This hot, granular carbon, as mixed, constitutes a mass which, particularly at high temperatures, is endowed with a mobility comparable to that of a liquid. It, therefore, penetrates into all crevices between the articles to be case-hardened and between these and the walls of the retort.

The Case-Hardening Operation.

When the granular carbon has been filled up to a level slightly below the upper edge of the retort, the butterfly valve is closed and the box, *O*, is removed. The central opening of the cover is closed, the plunger, *L*, is lowered and the tube, *D*, is screwed into the nozzle, *C*, through which the carbon monoxide or dioxide, pure or mixed with air, is admitted gradually to the distributor, *E*, from which it passes into the retort. To regulate the current of carbon monoxide, an ordinary gas meter of the dry type is used. The case-hardening operation then proceeds with the proper regulation of the current of gas and the temperature. A pyrometer can be used for making temperature measurements from time to time. This is passed through the holes in the cover and is inserted into various parts of the mass of granular carbon. The temperature should be maintained constantly at a fixed point between 900 and 1,100 degrees Cent. The gas issuing from the retort through the pipe in the cover can be collected in a gasometer, and after suitable regeneration, it will serve for further heats.

Discharging the Retort.

When the heating has proceeded a sufficient length of time, the current of carbon monoxide is shut off, the tube, *D*, is removed, and the discharge of the retort is undertaken. The discharging operation begins by withdrawing the entire granular carbon content at once, which is removed through the valve, *Q*, into the box, *O*. If carefully graduated case-hardening is required, the specific action of the carbon monoxide is isolated during the last phase of the case-hardening from the direct action of the granular carbon. In that case the box, *O*, is placed so that the neck of the funnel, *B*, is inserted into the open end of the tube, *P*, the box for this purpose being placed in the chamber below the muffle, where it can be handled on a truck. The valve is then opened gradually and a quantity of the granulated carbon is drawn out of the retort. Sufficient solid carbon is retained in the retort to insure the desired chemical equilibrium of the gas. The remainder of the carbon is removed from the retort after the second phase of the case-hardening with isolated carbon monoxide has proceeded sufficiently far to attain the desired results.

Furnace Output.

When the cover of the retort is removed, the plunger, *L*, is raised until its conical head beds itself in the recess provided for it in *C*. The hydraulic ram then continues to move slowly, lifting *C*, *E* and *F* with the case-hardened pieces resting on them. The operator standing above the furnace near the open muffle picks up the case-hardened pieces as they come within reach and quenches them in a tank. When all of the pieces have been removed, the furnace is ready for another charge. The entire period for the charging operation varies from four and a half to six minutes, while the time required for the complete discharge of the retort averages from three and a half to five and a half minutes. The period of case-hardening never exceeds two hours and may even be reduced to one hour, according to the thickness of the articles to be treated. The time is estimated from the completion of the charging operation to the beginning of the discharge of the retort. It, therefore, includes the time necessary for bringing the temperature up to the working point, which requires not more than 10 minutes, as both the solid carbon and the pieces are already hot when charged. The productive capacity of each retort ranges from a minimum of one ton to a maximum of five tons of case-hardened pieces in 24 hours.

The advantages of a furnace of this type consist mainly in the greater speed of operation for a given charge and in the increased uniformity of the treatment of all of the pieces forming the charge in the muffle. The uniformity is not limited to the temperatures of starting or of working, but it applies also to the distribution of the carburizing gas. In a vertical furnace of this type the clearance spaces left in the retort are reduced to a minimum, whereas in the horizontal muffles the clearance spaces at the head of the retort result in appreciable losses of heat and of carburizing material, thereby lowering the productive capacity.

Effect of Tungsten in Tool Steel

While tungsten has been known for many years, its economic importance is of recent growth. The meaning of the name is heavy stone and its most important use, according to Frank L. Hess, of the United States geological survey, is an alloy for tool steel. Lathes equipped with tools made from tungsten steel may be speeded up until the chips leaving the tool are so hot that they turn blue, an operation that would spoil the temper of high carbon steel. It is stated that about five times as much work can be done with lathes built for such speed and work, as can be done by the same lathes with carbon steel tools. From 16 to 20 per cent of tungsten is ordinarily used in lathe tools. The melting point of tungsten is 5,576 degrees Fahr. Tungsten also has important use in making filaments for incandescent lamps, crucibles for electric furnaces and various other articles.

A Process for Galvanizing Wire in Zinc Dust[1]

Details of a New Zinc Coating Method for Iron Wire Whereby the Same Results are Obtained as by Hot Galvanizing

By Alfred Sang

It will be recalled that zinc dust does not melt when heated to the temperature of fusion of zinc, but at higher temperatures reducing agents will precipitate the metal and it can also be squeezed out under mechanical pressure. This property of resisting fusion is probably due to the surface of each particle being formed of zinc oxide or zinc carbonate.

If zinc dust is heated uniformly, the temperature is found to rise steadily until around 390 degrees Cent., when the rise becomes much more rapid, attaining its maximum rate at about 420 degrees, then falling gradually until at approximately 470 degrees it again becomes normal. When the dust is cooled an opposite effect is noted between 450 degrees and 260 degrees Cent. If the operations of alternately heating and cooling the same dust are repeated, the exothermic and endothermic effects are manifested each time between the same temperatures, with their maximum points about 420 degrees on the rise and about 350 degrees on the fall.

Sherardizing Process.

If a clean piece of steel wire is immersed in zinc dust which is heated to a temperature below 420 degrees, or at what is known as sherardizing temperatures, a slow cementation takes place and zinc is absorbed from the very moment that the wire reaches the temperature of the dust; there is at the same time a slow sublimation of zinc at the surface increasing with time, but sufficient for all practical purposes after a few hours of treatment; in the presence of reducing gases, the time of treatment can be considerably lessened, but the penetration of zinc is, of course, less. This process is sherardizing, unsurpassed for many purposes, unsuitable for many others. There are two varieties of sherardized coatings, the gray, porous and brittle variety, mostly composed of zinc carbonate which darkens with age; the other variety has a high metallic luster and is compact and of a finely crystalline structure. If this were the class of sherardizing produced by all existing plants, there would not be much hot-galvanized work produced outside of wire and sheets.

When we work with the dust at a temperature above the critical degree, results are entirely different; galvanizing is instantaneous, taking place the very instant that the wire reaches the temperature of the dust. There is very little penetration of zinc in the iron; there may be vaporization and condensation of zinc as in sherardizing, although I doubt it. A wire heated to 800 or 900 degrees in a non-oxidizing flame and quickly thrust into cold zinc dust will condense around itself a considerable thickness of zinc. The best working temperature ranges between 500 and 600 degrees Cent. The galvanizing is bright and more pleasing in appearance than that obtained by any other means.

Furnace Used.

I will not go into details of the furnace used, which merely consists of a zinc dust trough between two sand troughs provided with a set of cast iron cover plates over the zinc trough and power-driven rolls. As high a speed as 850 feet per minute can be used for securing good merchant galvanizing. It is found preferable to run at 35 feet only, running a large number of strands and attaching the coils end to end.

The process is economical as regards current consumption which, outside of zinc and labor with a very small amount of power for driving the rolls, represents the bulk of direct cost. Figures are readily arrived at, for as soon as the dust has attained a fairly constant temperature, as it very rapidly does, the consumption of electricity in watt-hours is represented by the following formula:

$$\text{Watt-hours} = \frac{7\ WS\ T}{6}$$

In this formula W = weight of wire treated, approximately 1,000 kilograms; S = specific heat of steel, approximately 0.18 at 550 degrees; T = temperature to be maintained, 550 degrees Cent.; W S T = calories needed, which, multiplied by the ratio 7/6, gives the watt-hours.

Figuring 75 per cent efficiency for the dynamo or transformer supplying the current, the above formula gives 154 kilowatt-hours per long ton of wire of any diameter.

While the wire is softened by the process, a full annealing can only be secured by using a higher temperature, the consumption of electrical energy being then increased from 40 to 50 per cent and the sand trough through which the wire passes after leaving the zinc dust must be appreciably lengthened. If a slight scale is to be removed, the high temperature must be used in connection with a reducing agent. Sand must be used with the zinc dust to prevent caking and cavitation in the path of the wire. Aluminum contact rolls and special mercury contacts are the only ones suitable for this kind of plant.

The wire can be brought out into the air immediately after coating, but it is preferable to let it cool by passing it through sand, which brightens it at the same time.

The instantaneous galvanizing of steel in zinc dust above 420 degrees is readily explained by completing the theory which I developed as far back as 1907.

Zinc dust is produced by the sudden cooling of the vapor of zinc and the transition from the gaseous to the solid state is so rapid that, for all practical purposes, the liquid state is skipped. The setting of the zinc, brought about by sudden chilling, prevents regular arrangement of the molecules along determined stereochemical lines; it forbids the formation of crystals for which time is required. The heat of solution of matter in an amorphous state is always higher than when in a crystalline state; the same is true of a strained condition which likewise presents an amorphous appearance. At the time of formation, considerable heat is retained which would have been radiated by slow cooling. The condition is one of physical instability resulting in readier and, oftentimes, explosive decomposition.

Instability of Zinc Dust.

The physical instability of zinc dust may be explained thus: In the prolongs of zinc furnaces the uncondensed vapor is suddenly chilled and collects in minute drops which are instantly congealed at the surface and oxidized, forming a rigid spherical

[1]Read at the Toronto meeting of the American Electro-chemical Society.

skin or crust. Within this crust the liquid zinc cools and contracts more slowly, but the rigidity of the crust does not permit the drawing-in of the surface to form the facets of a crystal and compensate this internal contraction. Thus, voids must exist within the crust and we may presume a structure which might be described as *piped radially* or as negatively crystalline.

Below the melting point of zinc this condition persists, but affinities and thermal inducements find a readier response from zinc dust than from any other form of zinc, both by reason of the enormous amount of free surface and because of this unstable condition.

At about 415 degrees, which is the melting point of zinc, the strain within the zinc dust particle is totally or almost totally relieved, as indicated by the loss of heat, although some of the latent heat must be retained for fusion.

Analogous to Hot Galvanizing.

At high temperatures zinc dust is pasty, because formed of innumerable little bags of melted zinc, but these will not coalesce on account of their small size and closely packed condition, unless considerable pressure is used. If, however, a reducing agent, say a drop of coal tar, is introduced, reduction of the skin takes place and we get a small mass of more or less spongy metallic zinc. If a metal which is electro-negative to zinc, such as iron, is put into contact with these bags of zinc, reduction and an exchange of metals take place, the bag is punctured at the point of contact and the zinc spreads itself on the iron.

Hence it is that wire can be galvanized in this manner by means of a plant closely resembling a hot galvanizing plant, for the process is, in fact, one of hot galvanizing.

A New Slag Bucket

At practically all blast furnace plants, granulated slag is removed from the pits in buckets operated by various types of cranes. It has been found, however, that this service is particularly severe on the bucket, because of the action on the steel by the water and sulphur and, in addition, the fine particles of the slag work into the bucket mechanism and cut the bearing surfaces. The Brown Hoisting Machinery Co., Cleveland, is building a bucket especially designed for this work. In Figs. 1 and 2, the bucket is shown in opened and closed positions. It is of the two-rope type and can be used on locomotive cranes, overhead traveling cranes or derricks. It has a capacity of 48 cubic feet, which is the standard size adopted, but will be built in other sizes to meet varying conditions. The bucket consists of two spades, each supported by two iron legs at the top, with the arms connected by the closing axle. The four legs are fastened at the top to a steel casting, which also provides the connection for the hoisting rope.

The closing rope is attached to a drum, which is enclosed by the rope guard, and the drum and guard bear upon the closing axle. The guard is bolted to the spade arms and the drum is connected to two closing chains, one on each side. The chains are attached to the steel casting at the top. When closing the bucket, the closing rope is unwound from the drum, which causes the drum to wind up on the two closing chains. This raises the axle with the spade arms and the bucket closes with its load. In dumping the load, the closing rope is let out and the bucket opens by gravity. The steel casting at the top is equipped with a guide roller for the closing rope, thereby holding this rope close to the hoisting rope. In opening and closing, the rope guard on the drum turns slightly, but not sufficient to cause the guard to come in contact with the rope. The center of gravity is so low that the bucket will not tip when dropped into the pit. All bearings are fitted with manganese steel keyed bushings and the spades are reinforced with steel plates. Each pair of legs is strengthened with a steel brace and the spades are perforated to permit the water to escape from the slag.

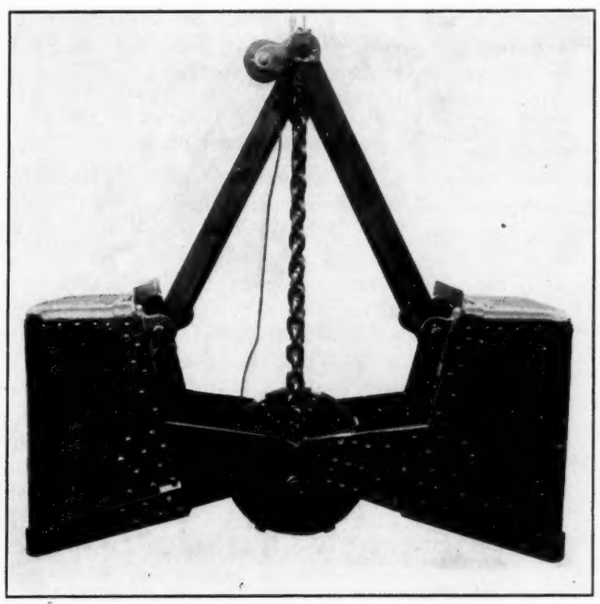


FIG. 1—SLAG BUCKET IN OPEN POSITION

FIG. 2—SLAG BUCKET CLOSED

The mineral statistics of Hungary which have been issued recently show that the production of iron ore in 1909 was 1,965,482 tons, compared with 1,936,407 tons in 1908; copper ore, 21,366 tons, against 16,886 tons, and manganese ore, 9,255 tons against 5,647 tons in 1908. The output of steel-making pig iron was 514,883 tons; foundry iron, 15,577 tons, compared with 505,559 and 17,415 tons, respectively, in 1908. The production of other metals follows: Lead, 1,590 tons; antimony, 695 tons, and copper, 265 tons.

Design of Oil-Fired Open-Hearth Furnaces*

The Construction of These Melting Mediums for the Production of Steel Castings—Calculations to Obtain the Sizes of the Hearth, Flues, etc.

By Walter Macgregor

In discussing the subject of open-hearth furnaces for the production of steel for small castings, I will confine my remarks with this fuel when the furnace is properly designed, the melter will have fewer difficulties to contend with.

If we turn a moment to the steam engineering profession we will see that the engineers, in well-conducted power plants, are giving their greatest attention to the problems of combustion and in the case of plants already in operation, experimenting to find a grade of fuel best suited to their type of furnaces.

It is a well understood fact among these engineers that the design of a furnace, to get the best efficiency from the fuel, depends entirely upon the nature of the fuel to be burned. Obviously, as we are to deal in high temperatures we are, therefore, to pick out a fuel high in heat value and design our furnace to suit the combustion of this fuel.

Highest Heat Values.

In order to get the highest heat our furnace body should be of such proportions that we can burn the necessary amount of fuel in the smallest possible space, and in order to burn a large amount of combustible in a small space, a short flame is necessary.

The factors governing the short flame, according to the fuel experts of the United States navy, are first, a pure carbon fuel; second, initial heating of the air which furnishes the oxygen for combustion; third, intimate mixture of the oxygen with the fuel or diffusion; fourth, large surface of the fuel presented for impact of this oxygen.

The first factor, the nature of the fuel, is settled for us, as we have decided upon fuel oil with a probable analysis, as follows: Carbon, 83.26 per cent; hydrogen, 12.41 per cent; sulphur, 0.50 per cent; oxygen, 3.83 per cent, with a specific gravity at 60 degrees Fahr. of 0.926.

The heat value of this fuel, according to Du Long's formulae, would be 19,481 B. T. U.'s per pound. From this analysis we can easily compute the quantity of air required for combustion and the products of combustion for any amount of fuel burned.

As a representative size of the small open-hearth furnace we will choose a five-ton furnace as an example and discuss the conditions that will determine the proper furnace proportions. We are to melt and reduce five tons of metal and the time from charging the heat until the time of charging the following heat we will assume to be four hours. As the oil consumed varies so much in different furnaces, we will assume as an average fuel consumption 48 gallons of oil per ton of steel melted in this time or one gallon per minute.

Considering 12 pounds of air required for burning one pound of carbon and 34.78 pounds of air required for burning one pound of hydrogen, we have from the analysis of the fuel:

9.9912 pounds of air to burn the total carbon in fuel.
4.2161 pounds of air to burn the total hydrogen in fuel.

14.2073
.16 Correction for oxygen in fuel.
14.0473 Pounds air for complete combustion of one pound of liquid fuel.

With fuel oil of 7.72 pounds per gallon, we have $14.047 \times 7.72 = 108.37$ pounds of air required per gallon of oil.

With air at 13.14 cubic feet per pound we have $108.37 \times 13.14 = 1,424.11$ cubic feet of air required to burn one gallon of fuel oil.

Hence, to burn one gallon we must admit, theoretically, 1,424 cubic feet of air per minute into the furnace. To this we must add the amount of air required in reducing the carbon and silicon in the metal.

The Furnace Charge.

We have a 10,000-pound charge, of which 12½ per cent is pig iron and about 2½ per cent carbon and the rest steel scrap and billets of about 0.30 per cent carbon, to be reduced to about 0.18 carbon at the time of tapping. From this we get the total carbon content of the bath, 56.5 pounds, to be reduced to 18 pounds of carbon, or $56.5 - 18 = 38.5$ pounds of carbon, to be burned out in about two hours of reducing the charge. As 157.6 cubic feet of air are required to burn one pound of carbon and we will require $157.6 \times 38.5 = 6,070$ cubic feet air in two hours or 50 cubic feet per minute. All of this passes off with the products of combustion. In the same way we can determine the amount of air required in eliminating the silicon, which will run about 42 cubic feet per minute. A certain amount of oxygen is also taken up by the manganese, but this is so small as to be negligible.

With the total theoretical amount of air required, $1,424 + 50 + 42 = 1,512$ cubic feet per minute, we are in a position to determine the proper furnace proportions with due regard to the second circumstance in producing the short flame.

Volume of Air.

The volume of air is figured at a temperature of 72 degrees Fahr., which will be about the temperature of air entering the valve. The increase in volume of air at different points along its travel due to its increase in temperature must be the governing factor in designing the ports, flue openings, etc., and as the volume of this air increases in direct ratio to the absolute temperature, it follows that the volume occupied at any point may be computed when the temperature at that point is known.

In the case of the air valve, due to the reversing feature of the furnace, this should be figured rather to accommodate the products of combustion than the entering air as these are at a higher temperature and will, therefore, require a greater area of flue.

The temperature of the valve is a vital point in the problem of design, for any heat beyond this point toward the stack is lost, as far as the furnace is directly concerned, and can only be used in the field of economizers. In determining the size of the valve, we will first have to determine the velocity of the products of combustion through the valve due to the draft of the stack and this, in consequence, gives as our starting point—the design of the stack—which we would naturally consider as our finishing point.

A number of eminent authorities on chimney design have chosen 600 degrees Fahr. as the most economical stack temperature and Rankine has spent considerable time in trying to

*Presented at the Pittsburg convention of the American Foundrymen's Association.

prove it in his work on "Steam Engines." I have never seen an open-hearth stack with that low a temperature and will, therefore, base my calculation on a temperature of 1,000 degrees Fahr. as being more nearly uniform with current practice. In my experience with small furnaces, I find that the most satisfactory stack draft to be maintained is about one inch of water. This is a function of the height of the stack and the difference in temperature inside and outside the stack. With this difference in temperature and a draft of one inch of water we would get a stack 110 feet high and hence, we will assume this as the minimum height to be desired. The velocity of gas due to the pressure head corresponding to this height of stack and temperature, allowing a 25 per cent friction factor, is a little less than 15 feet per second, which is recommended by a number of authorities as good practice.

We have based our calculation so far on the theoretical amount of air required for combustion, but will design our stack and flues as in the case of power plant design, for an excess capacity of 100 per cent which would be 3,000 cubic feet of gas per minute or 50 cubic feet per second. This divided by the velocity of 15 feet per second would give a sectional area of stack of 3 1/3 feet or a trifle over two feet in diameter and we will assume 27 inches diameter of stack as best suited to this furnace and plenty large enough to permit of any crowding of the furnace. This then will also be the size of the valve and flues leading to the valve from the checker chambers.

Initial Heating of Air.

The second factor governing the short flame, "The initial heating of the air," is introduced by means of the reversing feature of the furnace through the checker chambers, and these chambers should be so designed as to slow up the travel of the products of combustion in order that they may give up the major part of their heat to the checker brick, or that part of the heat which is not required to produce the stack draft. The cubical contents of these chambers should not be less than 75 cubic feet per ton of steel melted per heat and preferably in the neighborhood of 100 cubic feet per ton. These chambers should be located behind the furnace and not immediately under the furnace. This point is quite as important in small furnaces as in large ones, as they operate at a higher temperature, and we should get the benefit of a good circulation of outside air under the hearth of the furnace. These chambers should be long and narrow or deep, in oil-burning furnaces, giving a very long travel to the products of combustion before they reach the valve, as on account of the highly volatile nature of the fuel and the slowness with which many of the hydrocarbons mix with oxygen, a great deal of the fuel will be out in the stack before it has undergone complete combustion.

The methods of gas analysis as applied to steam boiler practice will show some very interesting relations in this regard. In a five-ton furnace which I have been operating, a flue gas analysis will show the following:

	CO_2 Per cent.	CO Per cent.	O Per cent.
At the rear of the checker chambers, 24 feet back of the center line of furnace	6.4	3.1	0.2
In the air valve, 9 feet further back	8.8	0.3	8.0
In the stack, 16 feet further back	9.4	0.3	9.0

With a decrease in temperature between the first and last point from 1,750 degrees Fahr. in the rear of the chambers to 930 degrees Fahr. in the stack.

Long Chambers and Flues.

In case all the fuel were burned before it reached the stack, the sum of the oxygen components of the flue gas would be 21 per cent, as there is 21 per cent by volume of oxygen in all the air admitted to the furnace, the volume of the carbon element being so small as to be considered zero. As a matter of fact, however, the sum of the oxygen components at the valve is only 17.1 per cent and even out in the stack it is only 18.7 per cent, which shows that there is some form of hydrocarbon gas occupying the other 4 per cent which is getting past the valve unburned and is being wasted out in the stack. This, I think, shows very conclusively the necessity of having long chambers and flues in oil-burning furnaces, to insure complete combustion of the gaseous fuel before reaching the reversing valve.

These figures are based on atomizing the fuel with compressed air instead of with steam, as with steam the hydro-carbons are slower in taking up oxygen and a gas analysis at the valve will show a higher percentage of hydrocarbon gas unburned at the valve and a corresponding increase in stack temperature. A sample of gas at the base of the stack when steam was used for atomizing purposes, showed the following analysis: CO_2, 7.5 per cent; CO, 0.4 per cent, and oxygen, 9.5 per cent, or a total of 17.4 per cent of oxygen components out in the stack, which is 5½ per cent less than shown at the base of the same stack with air and, therefore, a less perfect combustion.

Air Ports and Furnace Body.

The third condition governing the short flame, "Intimate mixture of oxygen with the fuel or diffusion" bears directly on the size and arrangements of the air ports and the furnace body. The size of the ports depends upon the size of the reversing valve, or vice versa, and the relation between the two is in a direct ratio to the absolute temperature at the two points, these temperatures being 1,490 degrees Fahr. at the valve and 2,800 degrees Fahr. at the ports, or in a ratio of 1 to 2. The ports, therefore, should have an area of twice the area of the reversing valve. We will, therefore, have a total port area at one end of the furnace of about seven feet. These ports should be carried out the full width of the furnace to prevent any short circuit of air through the furnace body, as the travel of gas through the furnace body should have the same velocity at all points to get the proper diffusion. These air ports should come well up above the hole in the monkey wall through which the oil burner enters the furnace, so that the air must come down on top of the flame rather than underneath it. This is a very important factor in designing a hot working furnace.

Hearth Space.

The space to be allowed for hearth in small furnaces should not be under ten square feet per ton of charge and the shape should approach more nearly a square than the oblong shapes in general use, as this tends to give a better effect of the radiation of the walls and roof, and by widening the furnace, we lessen the cutting action of the flame on the side walls and keep down the repair bills.

As to the length of the furnace body this should be governed by the length of the oil flame, for the hottest part of the flame should be about the center of the furnace. It has been my experience that I have not been able to get a flame that was intense enough to melt down a charge of metal any less than about eight feet from the tip of the burner to the hottest part of the flame, and as the tip of the burner should pass clear through the monkey wall, which will extend nine inches beyond the ports of the furnace at least, we will get as a minimum furnace length, twice the length of the flame previously men-

FIG. 1—MAIS COMMERCIAL TRUCK

tioned, plus twice the width of the ports, plus twice the thickness of the end walls, plus twice the nine-inch extension of the monkey wall beyond the ports, or a total of about 22 feet as the minimum length of the outside of the furnace body.

The fourth factor governing the short flame, "Large surface of fuel presented for impact of oxygen," is a matter of oil burners and atomizing agents and has furnished inspiration to thousands of inventors. The problem of atomizing this fuel oil is one of overcoming the surface tension of the oil and breaking it up into very fine particles so that it will present a greater surface for contact with the oxygen and the two methods in use, superheated steam and compressed air, give a low mechanical efficiency.

There is a great deal of discussion at the present time on the needless waste of using compressed air for atomizing purposes when superheated steam will answer, but in the small casting business one of the main difficulties is getting the metal hot enough to run the thin sections in the molds and, since by its very nature, compressed air while atomizing the oil, furnishes at the same time oxygen for combustion, and that, too, very intimately mixed with the oil, it is quite evident, that by using air we would get quicker combustion, a shorter flame and a somewhat hotter furnace.

In conclusion I will say that in operating a furnace designed along these lines it will not be a difficult matter to get out six, five-ton heats in 24 hours, and still have the metal hot enough to pour many castings weighing a fraction of a pound each. With a five-ton heat it is not uncommon to pour as high as 175 molds, consuming about 50 minutes in pouring. The metal must, therefore, be extremely hot at the time of tapping the heat.

The Mais Motor Truck

A new line of light gasoline motor trucks has recently been placed on the market by the Mais Motor Truck Co., Indianapolis. The cars are built in two sizes, 1½ and 2½ tons capacity, respectively. Both cars are equipped with the same motor and are similar in general design. A four-cylinder, vertical, water-cooled, long stroke engine is installed.

The engine cylinders, while affecting the T-head design, are in reality round. They are 11½ inches in diameter outside and the outer or water jacket walls are continued to the bottom flanges; the space thus gained is used as a housing for the valves. The openings or housings are closed in with aluminum cover plates held in place by long steel studs, fitted with small hand-wheels. The cylinders are cast in pairs with integral water jackets. They are 4 inches in diameter with a 5¼-inch stroke, and have a rating of 24 horsepower at 900 revolutions per minute. The pistons are flat-topped, fitted with three diagonal-lap ¼-inch compression rings, placed above the 1½-inch wrist pins, which are secured in the connecting rods. Another piston ring is placed well below the wrist pin.

To permit the clearance of the connecting rods, the bases of the cylinders are cut away at the sides, since the rods describe a large arc, owing to the long stroke, which would not be the case with a short stroke unit. The intake valves are on the left side of the engine and the exhaust on the right.

Expanding Shoe Clutch.

An expanding shoe type clutch, of simplified design, is employed. It is fully enclosed in a cast iron housing, formed by the enlarged end of the crank case and the forward portion of the transmission or gear case, as shown in Fig. 2. The clutch is carried on an extension of the main shaft of the transmission and is formed with six aluminum shoes, in which there are deep grooves registering with similar members in the inner face of the clutch, which is bolted to the flywheel. When pressure is applied to the clutch pedal, the six aluminum shoes are forced inwardly, that is, they are withdrawn from the female rim. The tendency under high speed, even should the tension springs weaken, would be to force these aluminum male members into the grooves of the female member through centrifugal action. The clutch is 12½ inches in outside diameter.

Behind the clutch is placed the progressive, three-speed transmission, the gear box being cast iron. All the transmission gears are five-pitch. The gears are shifted by a hand side lever which is inter-connected with the clutch so that changes in speed can only be

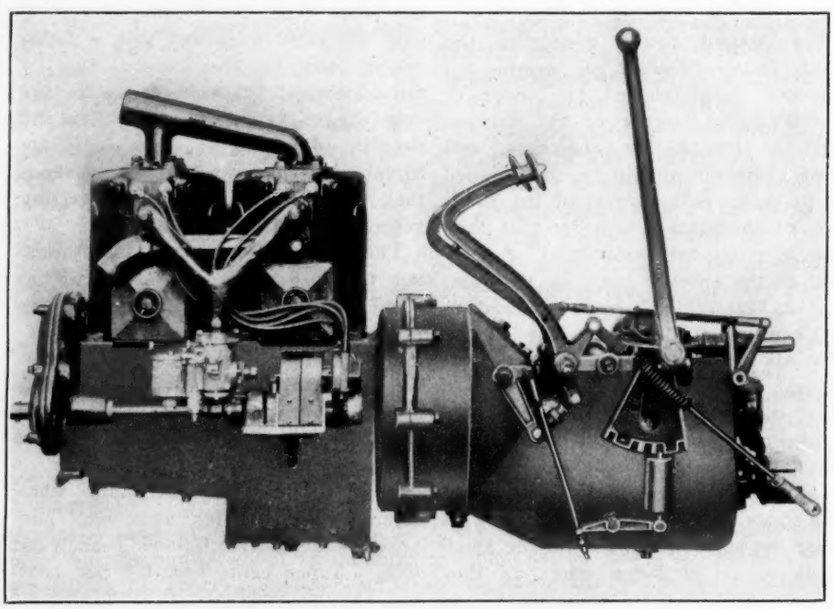


FIG. 2—MOTOR, CLUTCH AND TRANSMISSION OF MAIS TRUCK

made when the clutch is fully disengaged. To prevent the clutch spinning after release, a small brake is fitted to the main shaft extension. The drive from the transmission to the rear axle is through a 1½-inch nickel steel shaft, fitted with two universal joints.

Rear Wheel Drive.

One of the principal features in the construction of this truck is the form of rear wheel drive. Common practice favors double side chains, but the Mais car is equipped with a live rear axle, rigidly supported. This live axle or jack shaft is 1½ inches in diameter and is held in position by steel studs and collars in the brake discs. The drive from the jack-shaft to the rear wheels is through internal spur gears, as shown in Fig. 3. This provides a simple construction and one in which worn parts may be easily replaced. The side rails of the Mais frame are made of five-inch section, nickel steel channels, two large gusset plates being fitted at the rear, extending clear across the frame.

There are two sets of brakes, one set on the rear wheel drums, the other on the pinion shaft drum, both of the external contracting order, and in addition, there is the clutch brake, previously mentioned. This prevents the clutch from spinning after disengagement, which is sometimes an annoyance, especially when it is desired to change quickly from one speed to another. The service brakes are 14 x 3 inches, fitted on the rear wheel drums and their tension may be regulated as desired. The emergency brake on the bevel pinion shaft is 10 x 3 inches. The service brakes are, of course, actuated through the foot lever, action being imparted through a steel rod from the equalizer, while the emergency brake is applied through a steel cable which engages on a steel, grooved pulley, held in a steel bracket bolted to the left side of the jack-shaft housing. The service brake rocker shaft is carried aft of the rear axle and is supported in a bracket attached to the axle.

Steering Gear.

The Mais commercial cars are steered from the left side. The clutch pedal is at the left and connected with this is a pull bar, operating a vertical plunger, which registers in the various slots in a quadrant, as determined by the transmission speeds selected. The right pedal is used for the service brakes, while the usual hand side lever works the pinion shaft brake. The control levers are drop-forged steel, both being ball-topped. The ignition being automatically controlled, the operator has only to watch the mixture.

The wheel tread is 58 inches, two inches wider than the standard, this being purposely done so as to overcome the proclivity of drivers to follow car tracks, a practice which causes the rapid wear of the tires.

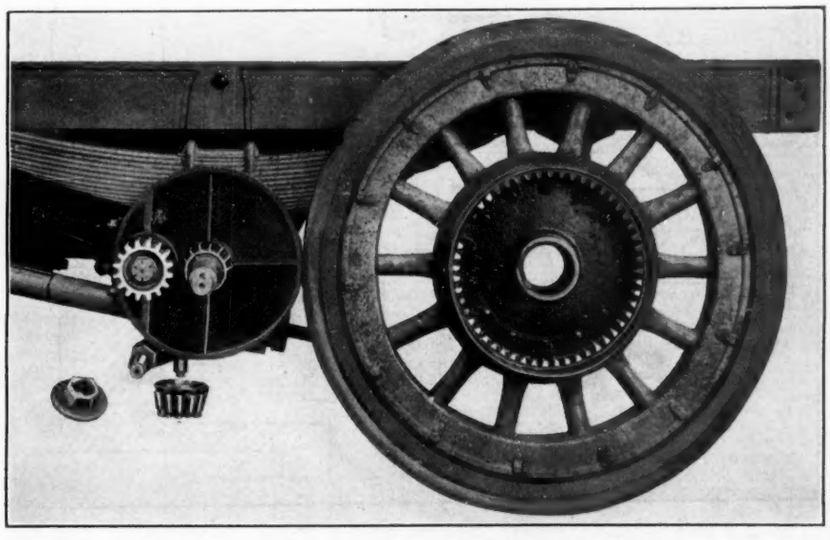
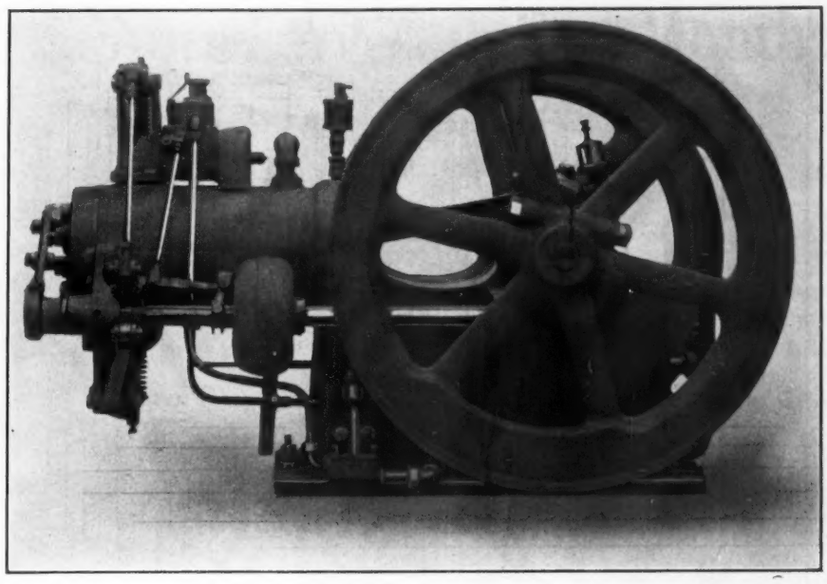


FIG. 3—INTERNAL GEAR DRIVE TO THE REAR WHEELS



FALK STATIONARY KEROSENE ENGINE

Falk Kerosene Engine

The M. Rumely Co. La Porte, Ind., is marketing a stationary kerosene engine, which is especially adapted for driving machine tools in groups and for small shops requiring only a moderate amount of power. It is known as the Falk engine and is built under license from the Secor-Higgins patents. The general features of the engine are shown in the accompanying illustration.

It is built in sizes ranging from 2½ to 15-horsepower and is provided with a throttling governor which holds the speed variation within 2 per cent on wide changes in load. This is one of the features which makes the engine particularly suitable for shop purposes and also makes it available for driving generators in small electric light plants. Being designed to use kerosene as a fuel, instead of gasoline, the operating cost is kept at a minimum and insurance premiums are low.

The engine is of the closed jacket type, having large vertical valves, mechanically operated. All packed joints are fitted with copper-faced asbestos gaskets. The gears are enclosed and operate in an oil bath.

T. S. Lloyd has resigned as superintendent of motive power and equipment on the Lackawanna railroad, his resignation becoming effective whenever his successor is selected.

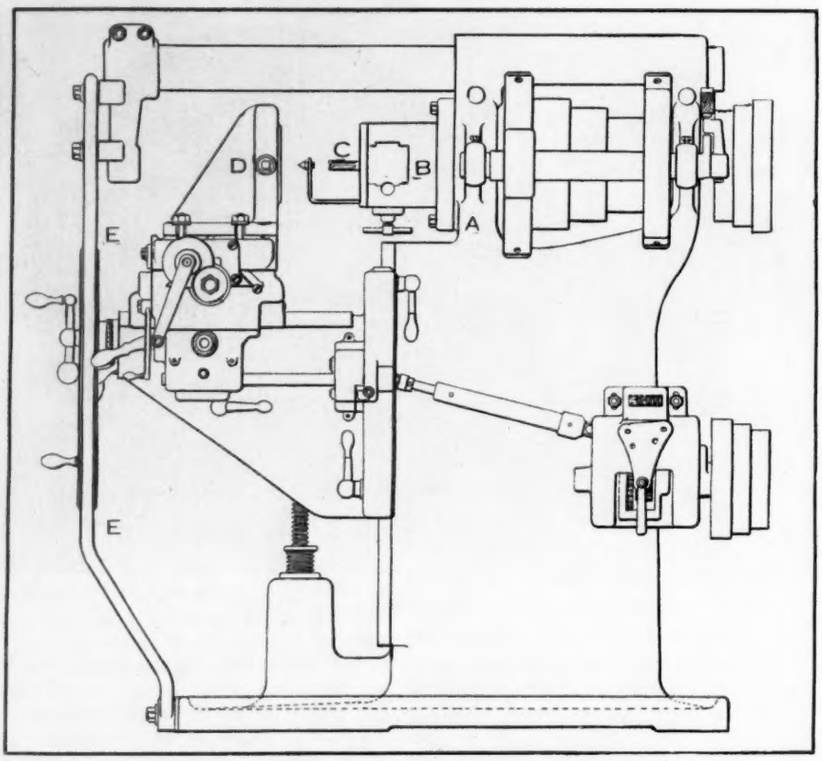


FIG. 1—SIDE VIEW OF COMBINATION TOOL, ADAPTED FOR MILLING SQUARE HOLES

Machine for Milling Square Holes

The R. K. LeBlond Machine Tool Co., Cincinnati, has designed a combination machine which is not only adapted for milling square holes, but also possesses all of the features of a standard milling machine. The machine is similar in design to this company's No. 2 type, plain milling machine, but embodies such changes as are of advantage to the successful operation of the square hole cutters. The principle is the same as employed in other devices and involves the use of a triangular bit, similar to an end mill, which revolves in a stationary master guide. The stationary guiding chuck is attached directly to the column of the machine. The cutter receives its motion from a special driving member which is fastened to the nose of the spindle. This driving member not only causes the cutter to rotate, but at the same time it is free to travel eccentrically in the master guide. The entire arrangement for cutting square holes can be readily detached and the machine can be used for regular milling work. As it is advantageous when cutting square holes in tough material to previously drill a round hole, the tool is furnished with an appliance for operating twist drills, which engages in the arrangement for boring square holes.

As the attachment for cutting square holes projects considerably beyond the nose of the spindle, the column bearing the main spindle has been set back to gain the distance taken up by this projection, thereby maintaining the full working range of the table. To insure the absolute rigidity of the work on the table, a brace is provided which connects the knee with the overhanging arm as well as with the base of the machine. As the cutting of square holes requires a very fine feed, the machine is provided with two separate cross feeds, one for regular milling work and the other for extra fine feeds starting from 0.001 inch. In cutting square holes, the work must be held absolutely rigid, a special vise being furnished for this purpose.

A side view of this machine is shown in Fig. 1. In this illustration, *A* is the column with the main spindle bearing; *B* the detachable chuck for cutting square holes; *C* the cutter; *D* the vise for holding work, and *E* the brace connecting the knee with the overhanging arm and the base. An axial cross-section through the square hole cutting arrangement is illustrated in Fig. 2. This consists of the driving member, *K*, which is screwed into the nose of the spindle, and the stationary guiding chuck, *H*, which is bolted to the column over the main bearing. The driving member contains a floating driving dog, *L*, into which cutters, *C*, engage by means of a taper thread. Behind this dog is a floating thrust plate, which takes the end thrust of the drills. The stationary guiding chuck contains the master guide, which consists of two jaws, *N*, which forms an adjustable square guiding hole in which the drill, *C*, is forced to describe its particular cam motion. At *O* is shown a right and left hand screw for opening and closing these jaws in accordance with the size of the drill used.

At *X*, Fig. 2, is shown the appliance for the operation of twist drills. A round bushing, *T*, is inserted in the square guiding hole, which serves as a bearing for the shank, *R*, which contains a Morse taper, *Q*. This shank is fastened in the driving member by the taper thread, *R*, and describes a revolution inside of the bushing, *T*. Any size twist drill can be inserted in the Morse cone and the whole arrangement can be easily detached.

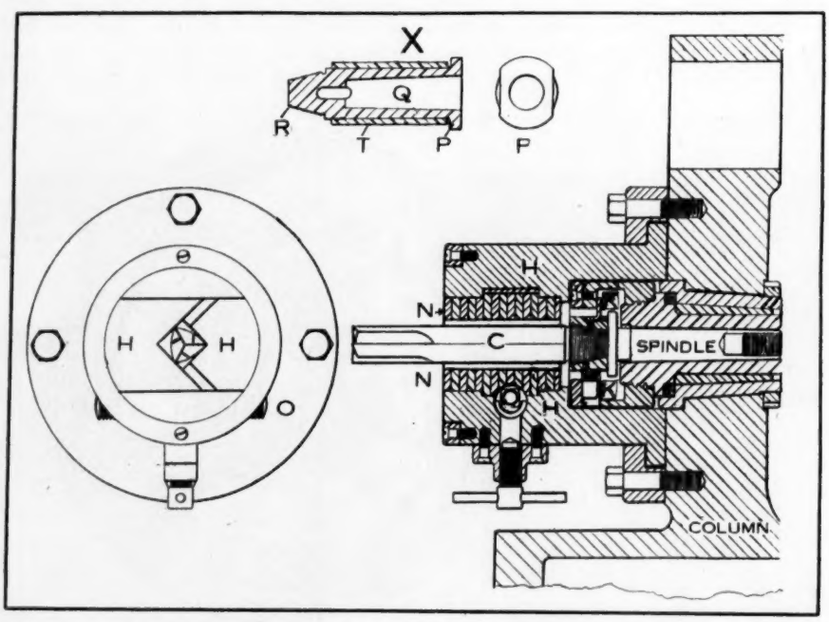


FIG. 2—CROSS-SECTION THROUGH SQUARE-HOLE CUTTING ARRANGEMENT AND THE APPLIANCE FOR THE OPERATION OF TWIST DRILLS IS SHOWN AT *A*

September Exports Were Largest in Five Months

Values Largest Since May Excepting August—Calender Year Tonnage Promises 40 Per Cent Gain Over Previous Record

Exports of tonnage lines of iron and steel in September amounted to 180,781 gross tons, showing a gain of 2 per cent over August, the largest total since April. If the September rate of exports continues through the remaining three months of the year the calendar year will show a total of about 2,163,000 tons, or 41 per cent greater than the exports of 1910, which year was easily the record.

Tonnage exports in the first nine months of this year show an increase of 47 per cent over those in the first nine months of last year. As it may be of interest to know just where the gains have been made, and which products have gained more than others, a computation is given for each item in the list. Instead of showing the percentage of gain in each line, the tonnage which would result from a 47 per cent gain over last year is computed, and then the actual tonnage of this year is compared, to show the percentage of gain or loss as compared with this hypothetical tonnage. This shows precisely the items which fell below a 47 per cent gain and which ran ahead of it, with the percentage of gain or loss as compared with assumed 47 per cent gain. The percentages for the different items are as follows:

Scrap	+149
Pig iron	— 23
Billets, sheet bars, etc.	+770
Wire rods	— 48
Rails	— 10
Steel bars	—109
Iron bars	— 27
Structural	— 6
Sheets and plates	— 16
Tin plates	+245
Barb wire	— 21
All other wire	— 4
Cut nails	+ 5
Wire nails	— 26
All other, including tacks	— 12
Pipes and fittings	— 16

The only items which showed absolute decreases were wire rods and iron bars, and these absolute decreases were small. Inasmuch as scrap and billets, sheet bars, etc., exhibited extremely heavy gains, they were the chief items which accounted for the 47 per cent gain and as a natural consequence nearly all other lines fell behind the 47 per cent, though none of them fell very far behind.

The September exports showed no striking variations in individual lines from the averages of the eight preceding months of the year. As a rule exports in September in each line amounted to about one-ninth the exports in the nine months ending September.

Iron and Steel Imports, Gross Tons.

	September,		Nine months ending Sept.,	
	1910.	1911.	1910.	1911.
Scrap	3,186	948	65,457	14,371
Pig iron	16,668	7,875	176,615	115,874
Blooms, billets and steel n. e. s.	3,919	1,879	36,026	23,245
Wire rods	1,256	844	15,779	12,129
Bar iron	2,508	1,645	31,211	20,840
Structural	*	345	*	*626
Sheets and plates	704	139	5,465	1,688
Tin plates	2,720	206	53,802	12,869
Totals	30,961	13,881	384,355	201,642

*Not separately stated prior to July 1, 1911.

September Imports Small.

Iron and steel imports in September were unusually light, as will be shown by the following table:

Iron and Steel Imports.

	1910.	1911.
January	56,207	32,795
February	43,613	20,455
March	54,176	23,533
April	47,698	22,392
May	42,569	23,376
June	30,322	29,395
July	41,933	15,456
August	36,879	19,746
September	30,961	13,881
October	31,455	
November	40,585	
December	31,576	
Totals	487,972	201,642

It will be observed that the September imports were the smallest for a long time. This was due largely to the reduction of tin plate imports to small proportions, but there was also a large decrease in pig iron, which covers ferro-manganese, spiegeleisen, ferro-silicon, etc., and it is known that ferro-manganese imports have lately been light.

Iron Ore Imports.

Iron ore imports by months have been as follows:

	1909.	1910.	1911.
January	105,233	284,823	102,600
February	61,749	170,427	94,820
March	108,676	163,633	134,785
April	74,782	206,135	133,900
May	97,393	240,333	217,467
June	124,714	193,415	118,296
July	172,316	248,810	200,845
August	209,855	282,949	175,183
September	164,613	208,892	184,456
October	178,051	219,571	
November	174,966	197,833	
December	222,609	173,710	
Totals	1,694,957	2,591,031	1,362,352

Sources of iron ore imports this year are shown in the following table:

	September.	Nine months.
Spain	26,487	164,662
Sweden	6,545	153,162
Canada	6,830	39,754
Newfoundland	25,200	130,280
Cuba	112,889	855,959
Other countries	6,505	18,535
Totals	184,456	1,362,352

Iron ore imports during the first nine months of the respective years have been as follows:

1909	1,119,331
1910	1,999,917
1911	1,362,352

With 2,000,000 tons imported in the first nine months of 1910, the whole year showed 2,591,031 tons, or 29.6 per cent more. Adding 29.6 per cent to the 1,362,352 tons imported in the first nine months of this year would give 1,760,000 tons as the prospective total for the present year, a decrease of 22 per cent from last year.

VALUE OF IRON AND STEEL EXPORTS—TONNAGE AND NON-TONNAGE.

	1907.	1908.	1909.	1910.	1911.
January	$ 14,327,926	$ 13,468,058	$ 10,329,388	$ 14,513,394	$ 18,739,961
February	13,946,842	14,063,559	10,947,159	13,949,082	18,690,792
March	16,419,116	15,168,155	13,874,461	17,258,503	22,591,848
April	17,684,863	15,455,319	13,058,054	16,529,254	24,917,056
May	14,594,043	11,281,415	12,993,197	17,658,042	20,616,795
June	17,226,259	11,677,944	13,779,736	16,503,204	20,310,053
July	17,614,017	12,085,951	11,866,772	16,108,102	18,052,337
August	17,587,181	12,058,561	14,136,219	17,628,538	20,704,154
September	16,830,160	11,221,799	12,966,908	16,776,178	20,534,139
October	18,786,750	11,505,063	14,249,598	17,452,085	.....
November	17,051,755	10,895,549	14,434,690	18,593,806	.....
December	14,997,869	12,231,741	15,075,183	18,300,710	.....
Totals	$197,060,781	$151,113,114	$147,680,331	$201,271,903	$185,118,660

EXPORTS OF TONNAGE LINES—GROSS TONS.

	1907.	1908.	1909.	1910.	1911.
January	102,630	74,353	70,089	118,652	152,144
February	87,912	81,773	84,860	110,224	150,704
March	112,787	96,681	94,522	124,980	215,671
April	132,790	93,285	100,904	117,921	227,835
May	91,543	64,041	109,977	135,306	178,185
June	92,996	69,770	114,724	120,601	173,837
July	122,240	86,796	100,680	128,060	162,638
August	118,792	86,244	105,694	131,077	177,456
September	114,819	76,732	97,392	118,737	180,781
October	123,170	85,766	110,821	129,325	.....
November	116,309	71,130	115,943	154,725	.....
December	86,019	77,659	137,688	149,666	.....
Totals	1,301,979	964,242	1,243,467	1,535,698	1,620,212

New Catalogs

GATE VALVES.—The Kelly & Jones Co., Greensburg, Pa., has distributed a card containing numerous illustrations of its various types of valves.

INERTIA VALVE GEAR.—In a bulletin recently issued by the Bates Machine Co., Joliet, Ill., the inertia valve gear now applied to all Corliss engines built by this concern, is illustrated and described.

TRUCKS.—A 38-page booklet, issued by the Spicer Mfg. Co., New Philadelphia, O., is largely devoted to its extensive line of mill and factory trucks. In addition, wire nails, cleaning barrels, bench grinders, etc., are illustrated.

PORTLAND CEMENT.—A booklet on the manufacture of Portland cement has been issued by the Universal Portland Cement Co., Chicago. The booklet contains a brief outline of the process of manufacture of Portland cement as employed at the various plants of the Universal company.

CONDENSERS.—A bulletin has recently been issued by the Schutte & Koerting Co., devoted to that concern's line of condensers. These condensers are particularly designed for use in mines. Dimension tables and line drawings showing the construction of these condensers are included.

STEAM TRAP.—The B. F. Sturtevant Co., Hyde Park, Mass., illustrates and describes the Flinn differential steam trap on a card recently issued to the trade. This trap works upon the principle of the difference in weight of two columns of water, aided by a spring. It is especially adapted for draining cylinder jackets of engines and is intended for use in restricted spaces.

BLOW-OFF VALVES.—The Nelson Valve Co., Philadelphia, has issued a booklet describing and illustrating its line of blow-off valves. It is claimed that these valves cannot be opened suddenly and that sudden and excessive water hammer is, therefore, impossible. The valves may be furnished to conform to various specifications, as explained in the booklet.

TWIST DRILLS, GEAR AND MILLING CUTTERS.—The Union Twist Drill Co., Athol, Mass., has issued a catalog devoted to its line of twist drills and gear and milling cutters. This book contains the usual list prices and illustrations. It has been arranged especially with a view toward furnishing information of value to the user of such drills and machines.

WROUGHT IRON PIPE.—"The Control of Quality in Every Process" is the title of a 32-page booklet, issued by the Bourne-Fuller Co., Cleveland, which traces the manufacture of Byers wrought iron pipe from the ore to the finished product. The illustrations are particularly interesting, as they show consecutively each stage of the iron pipe manufacturing process.

POWER TRANSMISSION MACHINERY.—Catalog No. 50, recently issued by the Jeffrey Mfg. Co., Columbus, O., is devoted to the Jeffrey line of power transmission machinery and supersedes the previous catalog on this subject. The catalog is handsomely illustrated and contains the usual price and dimension lists. Included are a number of tables containing valuable data on rope drives, capacity in horsepower of belts, etc.

ELEVATOR GUIDE LUBRICATORS.—A bulletin, recently issued by the Peterson Engineering Co., Hudson Terminal building, New York, is devoted to that concern's line of elevator guide lubricators. These lubricators are constructed of heavy, close-grained, cast iron, polished smooth and heavily nickel-plated. They are furnished complete with the brackets necessary for attaching to any type of car.

PUMPS AND CONDENSERS.—In a 64-page booklet, the Dean Bros. Steam Pump Works, Indianapolis, briefly illustrate and describe their extensive line of pumps and condensers. Details are included, showing sizes and capacities. The booklet is well illustrated and is only intended for reference purposes as special catalogs of the various styles of pumps shown will be furnished to prospective purchasers.

SHAPES, PLATES, RAILS, ETC. — A handsome, leather bound volume on shapes, plates, bars, rails and track accessories has been issued by the Carnegie Steel Co., Pittsburgh. It supersedes and cancels the book on shapes issued in 1903, as well as supplements to the latter. The book contains the usual profiles and dimension tables for the various products. Tables are also included which contain the weights of the various sections.

MAILING BAGS.—For the purpose of mailing small pieces of castings, samples of iron ores, bolts, nuts, screws, small forgings and other small iron and steel parts, the Clark Mailing Bag Co., 110 East Tompkins street, Columbus, O., is manufacturing muslin mailing sacks in four sizes from 3 x 4 inches to 5 x 7 inches. The muslin back addressing tag is firmly attached to the mailing sack and the bag forms a convenient wrapping for mailing small iron and steel articles.

DROP FORGED CHAINS.—A new catalog issued by the C. O. Bartlett & Snow Co., Cleveland, describes and contains a number of illustrations of installations of drop forged chains of "Triumph" brand. These chains are designed for various purposes and are particularly adapted for use in hauling, elevating cars and skips at mines and blast furnaces, etc. The catalog includes revised lists and contains line cuts and other information of value to users of this kind of apparatus.

VACUUM JET CONDENSERS.—In a bulletin, recently issued by the Wheeler Condenser & Engineering Co., Carteret, N. J., vacuum jet condensers are illustrated and described. A number of interesting tables of actual tests are included and a chapter is devoted to the subject of air removal from jet condensers. A section of this bulletin is also devoted to barometric ejector condensers for operation in connection with reciprocating engines, where extremely high vacuums are not demanded.

SIFTING MACHINES.—A 36-page catalog, issued by the Hanna Engineering Works, Chicago, is devoted largely to this company's extensive line of riddles and screen shakers. These include pneumatic tripod shakers, stationary post shakers, trough shakers, electric riddle oscillator, revolving dumping riddles and accessories. A portable mold dryer is also illustrated, as well as the Hanna line of riveters. The catalog also contains a partial list of buyers of these sifting machines.

COMPRESSORS.—The Ingersoll-Rand Co., 11 Broadway, New York City, in a 12-page bulletin, describes power-driven, single stage, straight line air compressors. This type consists of an air cylinder supported by a main frame with the piston operated by means of a center crank shaft and a belt wheel on one side and a fly wheel on the opposite side. The shaft and wheels can be reversed in the bearings if the belt wheel is preferred on the other side. The catalog shows several views of this compressor in section and contains tables of sizes and capacities.

CORLISS ENGINE.—Corliss engines, as manufactured by the Filer & Stowell Co., Milwaukee, are described in a catalog issued by that concern. These engines are manufactured in a wide variety of sizes and designs to meet the requirements of the various users. Particular attention is given in this catalog to the line of compound and multiple cylinder engines which are adapted for use in plants where the demand for power is heavy and constant. The catalog contains numerous tables and line cuts of value to prospective purchasers of Corliss engines.

COMPRESSORS.—The Ingersoll-Rand Co., 11 Broadway, New York City, in a 12-page bulletin illustrates and describes steam-driven, single-stage, straight line air compressors. These machines are equipped with twin fly wheels, center crank of the enclosed type and the steam and air cylinders are arranged in tandem. The bulletin shows several views of the machine in section and also gives tables of cylinder diameters, dimensions and capacities. The air inlet valves on the smaller machines are of the direct-lift type and on the larger machines hurricane inlet valves are standard. On all sizes the discharge valves are of the cushioned, direct-lift type.

FIRE BRICK FOR CUPOLA LININGS.—A 30-page booklet, issued by the Harbison-Walker Refractories Co., Pittsburgh, is devoted to this company's extensive line of fire brick and shapes for cupola linings. In addition to views and dimensions of the various shapes, the booklet contains a brief story of the manufacture of this foundry material. Interesting records of cupola operations with Harbison-Walker linings show an average daily melt for one furnace of 61,656 pounds for a period of 231 days or a total melt of 5,714 tons. This cupola was 72 inches in diameter. Another cupola with a similar lining, 78 inches in diameter, was operated 231 days, the melt having totaled 5,927 tons or an average of 51,316 pounds daily. Interesting suggestions are included regarding the use of fire brick and silica brick and the work concludes with tables of circle brick, arch brick and 9-inch key brick.

ALLOYS.—A 36-page booklet, issued by the Primos Chemical Co., Primos, Delaware county, Pa., is devoted to metals and alloys manufactured by this concern, which are used in the production of castings made from gray iron, malleable iron, Bessemer, open-hearth, converter and electrical steel, as well as high grade tool steel for various steel objects. The alloys manufactured by this company include ferro-vanadium, vanadium copper, tungsten metal and ferro-tungsten, molybdenum metal and ferro-molybdenum, ferro-boron, ferro-nickel, chromium metal and ferro-chrome, titanium alloy, silicon manganese, silicon copper, etc. To those using alloys of various kinds this booklet will prove of great value as analyses are included of the different alloys, showing the content of the various metals, as well as the uses for which these different alloys are intended. A large number of illustrations are included, showing not only the company's works at Primos, Pa., but the mines owned and operated by this concern from which raw materials, such as vanadium and tungsten ore, etc., are obtained.

With the exception of one or two periods of slight irregularity, the trend of security prices on the New York stock exchange last week was upward. The chief outside influences were improved car and rail buying, the approval by the United States circuit court of the reorganization plan of the American Tobacco Co., and the granting of a temporary injunction against putting into effect the reduction of railroad freight rates in inter-mountain territory.

Monday, stocks were active, firm and higher, standard railroad issues leading the advance; wheat was weak and lower; foreign markets unsettled. Tuesday, the principal markets were closed, due to elections. Wednesday, the market was reactionary, Steel common leading in a decline of 1 to 2 points. Thursday, the market was buoyant, Steel common being in the van of a 2 to 5 point advance. Friday, stocks were active and irregular in the early trading but later turned strong, and, under the leadership of Steel common, Amalgamated Copper, Lehigh Valley, Reading and Union Pacific, advanced to the highest prices of the movement. Saturday's close was accompanied by a reaction of about 1 point.

Call money ranged nominally between 2½ and 2⅛ per cent. Time money rates were unchanged and the demand was dormant. The actual condition of clearing house institutions showed loans increased $5,188,000; net deposits increased $5,696,000; total reserve, $420,233,000; excess of reserve, $13,608,050, an increase of $2,075,100. Non-member banks and trust companies showed loans decreased $4,042,400; net deposits decreased $4,152,300; reserve on deposit decreased $1,023,300; and the percentage of reserve 18.7, unchanged. Bank clearings showed a decline of about 15 per cent from the previous week, but an increase of 1.1 per cent from the corresponding week last year. Commercial failures numbered 248, compared with 245 the preceding week and 207 the corresponding week last year.

	Closing Quo. Nov. 11	Changes in week	Annual Meeting date 1911	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	3¼	+ ¼		$19,820,000		.....	.....
Allis-Chalmers, pr.	12	+1¼	Nov. 2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	12	+1	Feb. 1	41,233,300		1¾ Q.	.....
American Can, pr.	91	+2¾		41,233,300	7 cum.	1¾ Q.	Oct., 1911
Am. Car & Fdy.	53⅝	+3⅝	June 29	30,000,000		½ Q.	Oct., 1911
Am. Car & Fdy., pr.	116⅛	+1⅛		30,000,000	n. c.	1¾ Q.	Oct., 1911
American Loc.	36¾	+1¾	Oct. 17	25,000,000	5	1¾ Q.	Aug., 1908
Am. Loc., pr.	103¾	+ ¾		25,000,000	7 cum.	1¾ Q.	Oct., 1911
American Ship	48	—1⅛	Oct. 11	7,600,000	4	2 Q.**	June, 1911
American Ship, pr.	106½	.....		7,900,000	7 cum.	1¾ Q.	Oct., 1911
Am. Steel Foundries	32⅝	+1⅝	Dec. 7	17,184,000		1 Q.	May, 1911
Barney & Smith	15	.....	June 6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr.	70	.....		2,500,000	8 cum.	2 Q.	Sept., 1911
Bethlehem Steel	30	+ ⅛	April 4	14,862,000		.....	.....
Bethlehem Steel, pr.	58⅜	+1		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43⅞	+ ⅛	Mar. 21	45,000,000*	5	1¼ Q.	Nov., 1911
Cambria Iron	44	.....		8,468,000*	4	2 S. A.	Oct., 1911
Chicago Pneumatic Tool	46	— ¼	Feb. 20	6,485,800	4	1 Q.	Oct., 1911
Colorado Fuel	28½	+1¾	Oct. 16	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	11¼	+ ⅝	Oct. 18	24,578,400		3½ Q.	.....
Crucible Steel, pr.	77¾	+2⅜		24,463,500	7 cum.	1¾ Q.	Sept., 1911
Empire Steel	6	.....	Feb. 22	1,254,770		.....	.....
Empire Steel, pr.	40	.....		2,500,000	6 cum.	1 S. A.	July, 1911
Fay & Egan	70	.....	Feb. 21	1,000,000	6 cum.	3 S. A.	Feb., 1911
Fay & Egan, pr.	110	.....		1,000,000	7 cum.	1¾ Q.	Aug., 1911
General Electric	154⅜	+2⅞	May 9	65,179,600	8	2 Q.	Oct., 1911
Harbison-Walker	45	.....	Jan. 16	18,000,000		½ Q.	Sept., 1911
Harbison-Walker, pr.	96½	.....		9,600,000	6 cum.	1½ Q.	Oct., 1911
International Pump	34	+5⅜	Dec. 12	17,762,500		1 Q.	Nov., 1910
International Pump, pr.	83	+1		11,350,000	6 cum.	1½ Q.	Nov., 1911
Lackawanna Steel	30	.....	Mar. 4	34,978,000		.....	.....
Lake Sup. Corp.	28	— ¼	Oct. 4	40,000,000		.....	.....
New York Air Brake	50⅛	+ ⅛	Mar. 8	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	94	.....	Feb. 8	8,500,000	6	1½ Q.	Dec., 1911
Niles-Bement-Pond, pr.	104	.....		2,000,000	6 cum.	1½ Q.	Nov., 1911
Otis Elevator Co.	68	.....	Mar. 20	6,375,000	1	1 Q.	Oct., 1911
Otis Elevator Co., pr.	95	.....		6,310,000	6 n. c.	1½ Q.	Oct., 1911
Pa. Steel	60	.....	May 8	10,750,000		.....	.....
Pa. Steel, pr.	100½	—2½		16,500,000	7 n. c.	3½ S. A.	Nov., 1911
Pittsburgh Coal	19¼	+1½	Feb. 10	28,104,600		.....	.....
Pittsburgh Coal, pr.	84	+3		27,071,800	7 cum.	1¾ Q.	Oct., 1911
Pressed Steel Car	33	+2	Feb. 15	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr.	96½	+1⅜		12,500,000	7 n. c.	1¾ Q.	Nov., 1911
Pullman	158⅝	+1⅛	Nov. 8	120,000,000	8	2 Q.	Nov., 1911
Railway Stl. Spring	32	+2⅜	Mar. 2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr.	100	.....		13,500,000	7 cum.	1¾ Q.	June, 1911
Rep. Iron & Steel	23	+2	Oct. 18	27,191,000		.....	.....
Rep. Iron & Steel, pr.	82	+2⅝		25,000,000	7 cum.	1¾ Q.	Oct., 1911
Sloss-Sheffield	43	+1	Mar. 15	10,000,000	5	1¾ Q.	Sept., 1910
Sloss-Sheffield, pr.	112	.....		6,700,000	7 n. c.	1¾ Q.	Oct., 1911
U. S. Pipe & Fdy. Co.	13⅞	+ ⅛	June 28	12,106,300		1 Q.	Dec., 1910
U. S. Pipe & Fdy. Co., pr.	43½	+ ¼		12,106,300	2	1¼ Q.	June, 1911
U. S. Steel	63¾	+4⅜	April 17	508,302,500	5	1¼ Q.	Dec., 1911
U. S. Steel, pr.	110	+ ¼		360,281,100	7 cum.	1¾ Q.	Nov., 1911
U. S. Steel 5s	101½	— ½		463,798,000	5	.....	.....
Va. Iron, Coal & Coke	61⅛	+1⅞	Sept. 19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	66	+1⅜	July 26	3,998,700*		1¾ Q.	Oct., 1911
Westinghouse Air Brake	153½	+5¼	Oct. 3	13,750,000*		5 Q. ‡	Oct., 1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special.

Shares were sold to the number of 4,087,700, compared with 3,747,700 the preceding week and 3,020,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $19,160,000, compared with $20,495,000 the preceding week and $8,587,000 the corresponding week last year.

Copper Stocks.

New York. — Amalgamated Copper closed 59½, a net gain of 4½.

Boston. — Butte Coalition closed 17⅞, a net gain of ⅞; Calumet & Arizona closed 51¾, a net gain of 2¼; Calumet & Hecla closed 390, a net gain of 10. North Butte Mining closed 25⅛, a net gain of 1-8; Quincy mining closed 59½, a net gain of ½.

Financial Notes.

The Pittsburgh, Bessemer & Lake Erie railroad has declared its usual semi-annual dividend of 3 per cent, payable Dec. 1.

The Harrisburg Iron & Steel Co., Harrisburg, Pa., has filed notice of its increase of debt from nothing to $17,200. The secretary of the company is M. L. Tyroler.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

Published Every Thursday by
THE PENTON PUBLISHING CO.,
CLEVELAND.

CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....808 Provident Bank Bldg.
NEW YORK.....1115 West St. Bldg.
PITTSBURGH.....2148-49 Oliver Bldg.
WASHINGTON, D. C.....Hibbs Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. The price of copies issued three months or more previous to date of current issue will be 25 cents each. Advertising rates furnished on application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POSTOFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

Copyright 1911 by Penton Publishing Co.

THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6,112
June	6,124
July	6,138
August	6,152
September	6,161
October	6,172

November 16, 1911

Marvels of Structural Steel

New York's latest marvel of engineering effort is a gigantic loft building, which will cover the site now occupied by the Madison Square Garden. This building is to be 24 stories and will contain approximately 1,800,000 square feet of floor space, making it the largest commercial building of its kind in the world. Not many blocks from the site of this proposed building giant, the construction of the 55-story Woolworth office building is progressing rapidly. This structure will be the highest building erected for office purposes in the world.

In no city of the nation has development of the steel skeletoned structure been more advanced than in New York City, especially Manhattan Island. The restricted ground space of Manhattan Island and the consequent enormous value placed on real estate, particularly in the financial and mercantile districts, have forced this development. It is not an unfamiliar sight to see tall business buildings of the metropolis, to all appearances modern and in good condition to withstand the wear of years, being torn down and the site filled by taller structures. Recently a modern 14-story steel frame office building at Nassau and Wall streets was razed by its owner, a banking institution, and the site built up with an elaborate new office structure of 31 stories. The housing of the congested population of the island is being passingly solved through the erection of tall apartment houses. It is not unusual for this type of building to be reared to a 12-story height. Now comes the 24-story light manufacturing and loft building. Such construction has largely been made possible by the use of steel sections for the frame work of superstructures. The wide adoption of steel in building operations in New York City is apparent in the common estimates that the metropolis under normal conditions monthly puts out work requiring about 50,000 tons of structural material and this figure falls considerably short of the full total, because a large part of the smaller work is not included.

The regularity by which records of building design and construction have been eclipsed in the large cities of the country in recent years makes pertinent the inquiry, what will be the ultimate goal of this development? One architect has said, half seriously, the 100-story office building is in sight. Whether the realm of possibility in the altitude of building construction will be reached in this generation can, of course, not be foreseen at this time, but from past accomplishments, the limits of possibility of the steel frame building appear far from being reached.

New York City will continue to be the leading field for the most marvelous development in building construction. Its size and physical position offer problems calling for the most ingenious, and to the layman world, probably the most daring skill of the structural engineer. The wide difference in the natural conditions over those prevailing in Chicago, makes unlikely the establishment of regulations restricting buildings to comparatively low heights, as was recently done in the middle western metropolis. The problems of the future in this respect will, of course, shape the ends of regulation, but to this date the situation in Greater New York seems to have been met by the authorities with prudent regard for the factor of safety, as well as with a full appreciation of the difficulties imposed by natural limitations.

Impressive Increase in Railroad Buying

An impressive showing is made by the railroad orders for rails and rolling stock in the past two or three weeks, impressive not only by comparison with the extreme thinness in the stream of railroad orders for months, but impressive also by comparison with the flow of orders in past times when railroad orders were regarded as all that could be desired. The rail orders placed are fairly large for the systems represented, and the orders are placed very early, as rail business is now conducted. It is true that there was a time when orders for the new year were placed many months before the close of the old year. The earliest important case was that of the Pennsylvania system placing an order in June for the following year, the tonnage being equal to at least 5 per cent of the year's total production. In those days, however, rail making capacity was limited, and only the roads which placed their orders early secured the deliveries they wanted, others having to take deliveries in months of inclement weather. The large increases in rail making capacity in the past few years, through the building of the Gary plant, the re-entrance of Bethlehem as a rail

producer and extensions by other rail interests brought the capacity to such a level that it was not thought the railroads would for a few years be under any necessity of ordering early so as to secure desired deliveries.

The question of price has not, apparently, entered into the rail market. In the case of cars, it is plainly stated that the very low prices going are largely responsible for the heavy buying. Not only are the car builders able to secure plates at 1.10c at mill, with other materials in proportion, but they are cutting their spreads to the smallest margin. Roughly speaking, the average price in 1905-6-7 was about $1,000 for an all-steel gondola of say 40,000 pounds weight, which was only about 2½ cents a pound. That price enabled the car builders to pay more than 1½ cents a pound for their plates, and higher prices still for axles and some of the other fittings, and yet left them a very comfortable profit. With plates at 1.10c and other materials proportionately cheap, and with very close margins for the shop work, the car builders are able to offer cars to the railroads at extremely attractive prices. There has been a decade of experience in the use of steel cars on a large scale, and the experience is that the cost of repairs is much smaller than with wooden cars, while the life is shown to be so long as to require an almost infinitesimal annual sinking fund for ultimate replacement.

As illustrative of the rate of car buying, it may be observed that in a single fortnight orders for at least 20,000 cars have been placed, while in the palmy days of car building there has never been a year which showed as many as 300,000 cars built in the United States. Indeed, in only two years, 1906 and 1907, were as many as 200,000 cars built.

For months, railroad buying has been notoriously slack, only a very small percentage of the total iron and steel production passing to railroad consumption. A quarter century ago, the railroads were estimated to take 60 per cent of the total output of the iron and steel industry. In the middle and late nineties, their purchases represented an average probably of between 20 and 30 per cent of the total output. In 1905-6-7, as was shown by comparisons in these columns some time ago, the proportion was larger, being between 35 and 40 per cent. In the past two years, however, the average has been less than 20 per cent. With this very small buying by the railroads, the iron and steel industry has worked up to a point of producing pig iron at the rate of 25,000,000 tons a year, engaging 75 per cent of the existing capacity. It may readily be observed that if the railroads continue to buy at the pace set in the past two or three weeks, they will be working back to their old proportion, and such buying would, apparently, take up all the slack which has lately existed between capacity and demand, without considering that if the railroads should assume a heavier pace in buying the immediate effect upon sentiment would be such as to increase buying in other directions also.

Orders Booked by the Bessemer Company

Among the orders booked recently by the Bessemer Gas Engine Co., Grove City, Pa., are the following: One 25-horsepower and one 35-horsepower gas engine for the Euclid Mfg. Co., Pittsburgh; a 25-horsepower engine for the High Grade Oil Refining Co., Bruin, Pa.; a 15-horsepower Bessemer for the Point Marion Machine & Mfg. Co., Point Marion, Pa.; an 80-horsepower Bessemer direct gas engine driven compressor for the American Natural Gas Co. for installation at Apollo, Pa.; a 20-horsepower Bessemer gas engine and gas pump for the La Belle Iron Works, Steubenville, O.; a 35-horsepower Bessemer gas engine for the Tuna Brick Co., Bradford, Pa., and a 50-horsepower engine for the Sterling Brick Co., Olean, N. Y.

The Western Dry Dock & Ship Building Co., Port Arthur, Ont., has taken a contract to build for a Canadian interest a small lake freighter of several thousand tons burden. About 1,200 tons of steel material will be required for this boat. At the present time, there are four or five other lake boats under negotiation for Canadian account.

CONTRACTS CLOSED

By the Alliance Machine Co. for Many Cranes.

The Alliance Machine Co., Alliance, O., last week closed contracts for seven cranes for the Youngstown Sheet & Tube Co., covering one 60-ton, one 40-ton, one 25-ton, one 15-ton, three 10-ton special cranes; and five cranes for the Pittsburgh Crucible Steel Co.—two 150-ton four girder ladle cranes, one 75-ton four girder ladle crane, one 40-ton special revolving trolley forge crane, and one 25-ton mixer trolley.

In addition to the above, orders recently taken include:—25-ton crane for Harlan & Hollingsworth Corporation; 10-ton crane for the Canton Sheet Steel Co.; 150-ton stripper crane for the Nova Scotia Steel & Coal Co.; 5-ton crane for the Inland Steel Co.; 5-ton crane for the Portsmouth Steel Co.; 5-ton wall crane for the Pennsylvania Steel Co.; 5-ton crane for the Wright Wire Co.; 10-ton crane for the Carnegie Steel Co.; one 10-ton and two 5-ton cranes for the Republic Rubber Co.; one 30-ton and one 5-ton crane for Scullin-Gallagher Iron & Steel Co.; one 6-ton crane for the Pittsburgh Plate Glass Co., and one 10-ton crane for the National Tube Co.

Among the shipments made during the month of November are included: One 75-ton four girder ladle crane for the National Tube Co. (Lorain works); one floor type Bessemer charging machine for the Dominion Iron & Steel Co.; two 10-ton coke hoists for the Tennessee Coal, Iron & Railroad Co.; one 24-inch I-beam shear for the Eastern Steel Co.; one 50-ton four girder ladle crane for the National Malleable Castings Co.; one 10-ton crane for the National Malleable Castings Co.; one gantry bucket crane for the D., L. & W. Railroad Co.; one 15-ton crane for the Inland Steel Co; seven 5-ton cranes for the Gary Screw & Bolt Co; five 6-ton jib cranes for the Indiana Steel Co.; one I-beam hoist for the American Conduit Mfg. Co.

Offer of Prize.—The Sociey of German Foundry Engineers, with headquarters at 60 Sybelstrasse, Charlottenburg, Germany, announces that it will offer prizes of 1,000, 500 and 300 marks ($238, $119 and $71.40) to the writers who will submit the best three treatises on the following question: "Have real advances been made in the construction and operation of cupolas during the last 20 years?" Full details regarding the contest may be secured by addressing the society.

Great Problems of Business World Discussed

From Varied Viewpoints at Annual Dinner of Academy of Political Science—How the Innocent Lamb of the White House Was Tricked.

Different aspects of the large problems that are confronting the business world of the nation were presented from the viewpoints of the business man, of the government and of the professional economist at the annual dinner of the Academy of Political Science in the city of New York, given at the Hotel Astor, New York City, Friday evening, Nov. 10. The banquet divided the sessions of the thirty-first annual meeting of the academy, which were held at Earl Hall, Columbia University, Friday and Saturday, for the discussion of topics covering the improvement of labor legislation, social efficiency in business and financial facilities for wage-earners.

Unusual interest was lent to the dinner meeting and its discussion of the general subject of "The Relation of the Government to Business", in view of the government's recent suit for dissolution of the United States Steel Corporation, by the invitations extended to Hon. George W. Wickersham, attorney general of the United States, and to Judge Elbert H. Gary, chairman of the United States Steel Corporation, to be present as guests of honor upon this occasion. Judge Gary was in attendance, but Mr. Wickersham was unable to be present. It was explained by Prof. Samuel McCune Lindsay, president of the academy, who presided, that in their accepting the invitations, the guests of honor had been assured that they would not be expected to speak unless they so desired. Judge Gary accordingly did not appear upon the program of addresses, but was a most attentive listener to the speakers of the evening. United States Senator Albert H. Cummins, of Iowa, who was to have presented the government's side of the question, also found himself unable to be present at the last moment.

About 600 ladies and gentlemen attended the dinner and included in the number were many business men, attorneys, educators and writers of national reputation. Representing the steel industry at the dinner, in addition to Judge Gary, were James A. Farrell, president of the United States Steel Corporation; E. A. S. Clarke, president of the Lackawanna Steel Co.; James T. McCleary, secretary of the American Iron and Steel Institute; Arthur J. Singer; Francis Lynde Stetson, general counsel of the United States Steel Corporation; R. C. Bolling, assistant general counsel of the United States Steel Corporation, and others. Among other notables were: Thomas J. Ryan, ex-Senator Chauncey M. Depew and Mrs. Depew, Henry Clews, Mr. and Mrs. Henry W. Taft, Samuel Untermyer, Miss Ida M. Tarbell and Miss Anne Morgan.

Satirizes Government's Course.

Frederick W. Whitridge, of New York City, former president of the academy, made his address a ringing satire on the methods of the government in attacking the large business combinations. He particularly singled out Attorney General Wickersham and made him and his efforts to enforce the strict letter of the Sherman law, the butt of the keenest shafts of rhetorical assault. He charged that the department of justice in the application of the Sherman act led to the inevitable consequence that it had gone into politics. He declared that Attorney General Wickersham had completely lost his sense of humor.

"He used to be, before he began his political career by lecturing to Yale students on how to succeed in politics," said Mr. Whitridge, " a man of considerable humor, but I have lately been reading his bill against the Steamship Trust and the cross between a poem, a political speech and a bill in equity which he has filed against the Steel Corporation, and I am bound to tell you he is lost. A portion of that latter document in which he tells you how the innocent lamb in the White House was tricked and deceived, how the miserable scoundrels of the Steel Trust spent $400,000,000 out of their earnings in improving their property, of how the heads of the various subordinate companies sat with Gary like Knights of the Round Table and 'under a sense of honor dearer than life itself' did what it was their plain duty to do, shows that Wickersham's last laugh has left him."

The speaker declared that he had been told that the government, in order to do the work of enforcing the Sherman act more thoroughly, had set up a general system of espionage; that employes of railroads and other corporations have been seduced from their allegiance to their employers and bribed to act as spies of the government. "Now, if this system of espionage is true, it is abominable," said Mr. Whitridge.

Mr. Whitridge thought the Canadian government in its "Combines Investigation Act", had devised a much saner and wiser course in the restraint and regulation of oppressive combinations than our own government in the enforcement of the Sherman act. He explained the workings of the Canadian plan and stated that he was convinced that under it the rights of producer and consumer were equally guarded.

"From all sides we hear of regulation by the government as a cure for all evils", concluded the speaker. "Regulation by the government, a wise, disinterested and dispassionate entity, is an alluring thought; but remember that the government speaks through individuals; it has taken the Interstate Commerce Commission 25 years to become respectable and in the case of new regulations, you would be dealing not with such dispassionate entity as you imagine, but almost invariably with a few spavined, broken-down politicians."

Perkins Urges Publicity.

George W. Perkins, former partner of J. P. Morgan & Co., in his address on "New York's Responsibility," commented upon the unfavorable conception of the New York business man that had been formed in many sections of the country. Yet, he declared, very few of the men who hold the high positions of trust and responsibility in the metropolis and had the conducting hand in big business enterprises were native-born New York men. They have come from all sections of the United States and the force of their personal abilities has advanced them from their different communities to their important offices in the business world. There are two congresses in this country, said Mr. Perkins, the law-making and political congress in Washington, and the business congress in New York. Both pursue different methods of publicity; everything said and done at Washington is purposely spread over the country, but that which has been

done by the business world has been largely kept to itself.

"The politician has been constantly advertising his wares; the business man has done nothing to offset this," said Mr. Perkins. "The politician's views and acts have received constant publicity while business has sat sphinx-like and too often behind closed doors. Yet under modern business methods, the business leader does business on such a large scale that he is handling vast sums of other people's money and he is just as accountable to his constituents for what he is doing as is the politician to his constituents for what he is doing.

"What has been known as 'big business' has unquestionably come under deep suspicion by the people and the disinclination of business men to come forward and state their case has not helped to dispel this suspicion. New York, with its great responsibility, should welcome and not repel federal efforts to unearth wrongdoing and to set up a higher standard of moral worth. There should be less tendency to cover and to condone wrong doing and more courage to openly condemn it. There should be ostracism for those who transgress, no matter what their abilities to produce results.

"If New York would retain its supremacy in commercial and financial affairs," said Mr. Perkins, "it can do so only by a keen realization of its whole responsibility to the country as a whole, by co-operating with the people, by seeing their point of view and giving due consideration to the ideas they advance. If New York wants financial supremacy, if it wants to be the commercial leader, it must pay the price; and the price is broad-minded, statesmanlike leadership."

Upholds Government's Acts.

Prof. Henry R. Seager, of the chair of political science of Columbia University, supported the government in its efforts to regulate big business. He charged that the great body of business men were too much absorbed in their own affairs to give the attention they owed to the movements for good government that were going on about them. Roberts Walker, general counsel of the Chicago, Rock Island & Pacific railroad, who took the place on the program of the lately deceased Robert Mather, said that the regulation of the railroads had gone too far for the good of the public for which it was intended. He thought the government had been unduly paternalistic in its regulation of the railroads and believed that a new business code should be adopted that would embrace equally all lines of business, exclusive of the professions. John Hays Hammond spoke briefly on the general topic of business regulation. He defended the selling of American products in foreign markets under the domestic schedule of prices on the ground of ultimate good for both the home producer and consumer. Indirectly this selling of low prices had another beneficial effect. It kept foreign makers from realizing all the economies of larger production and placed American manufacturers in a better position to compete in neutral markets or for South American trade.

Denies Freight Reduction

President F. D. Underwood, of the Erie railroad, has denied a report emanating from Pittsburgh that his company, with the Pennsylvania, Pittsburgh & Lake Erie, Baltimore & Ohio, Bessemer & Lake Erie and Wheeling & Lake Erie shortly will have reduced their freight rates on coal, coke and iron ore. This report has gained circulation in connection with the agitation for such a reduction which is being carried on by iron and steel manufacturers in the Mahoning and Shenango valleys and in the Pittsburgh district. James A. Campbell, president of the Youngstown Sheet & Tube Co., is the chairman of the committee of manufacturers having this movement in charge.

Reject Reorganization Plan

The organized Dutch bond holders of the Southern Iron & Steel Co., at a meeting held in Amsterdam, Oct. 30, rejected the plan of reorganization for this company which had been proposed in connection with a contemplated merger with the Alabama Consolidated Coal & Iron Co. The Dutch bond holders regarded the plan as unsatisfactory and through their protective committee, criticized the provision whereby bond holders not consenting to the plan would practically be subjected to goodwill of the reorganization committee.

The Baltimore & Ohio and the Wabash railroads have agreed to abolish inter-line switching fees at Pittsburgh and are now quoting a flat rate to and from all points.

No. 3 Bessemer stack of the Tennessee Coal, Iron & Railroad Co. broke the record for output in October, making 7,659 tons.

BOOKED INCREASE

Shown by Steel Corporation Statement Through Lighter Shipments.

An increase of 83,011 tons or 2.25 per cent in the total of unfilled orders on hand Oct. 31, was reported by the United States Steel Corporation in its monthly statement for October, which was made public Nov. 10. This increase compares with a reduction of 84,668 tons in September and brings the unfilled tonnage to practically the same level as shown on Aug. 31. The statement disclosed the tonnage of unfilled orders on hand Oct. 31 to be 3,694,328 tons, compared with 3,611,317 tons as of Sept. 30.

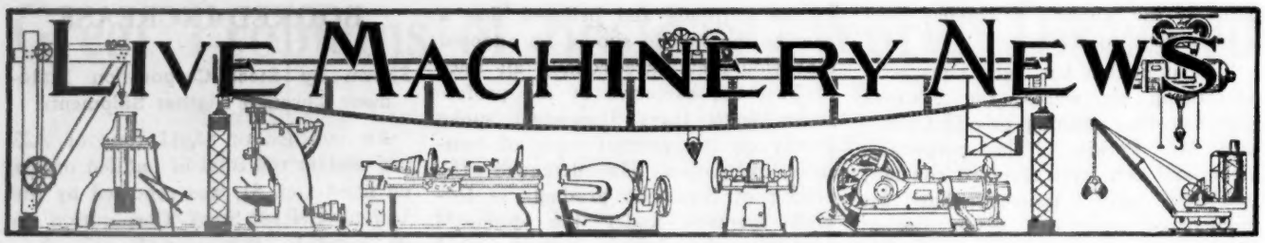
The showing caused considerable surprise in financial circles where a sharp decrease was expected since it had been known that the volume of new business entered in October had been less than in September. The explanation for the increased tonnage on hand is to be found in the fact that shipments in October were less than in September and this reduction was considerably more in tonnage than the falling off in the volume of new business entered. The month of November begins for the Steel Corporation with an increased volume of new orders being entered, which should make a very favorable showing at the end of that period if the present rate of business is maintained.

Since the plan of making monthly statements of unfilled tonnage has been followed by the Corporation, the statements of business on hand, the tonnage and percentage of increase or decline from the previous month, have been as follows:

Date.	Total.	Change, Tonnage.	Change, Per cent.
Oct. 31, 1911....	3,694,328	83,011+	2.25+
Sept. 30, 1911....	3,611,317	84,668—	2.34—
Aug. 31, 1911....	3,695,985	111,900+	3.33+
July 31, 1911....	3,584,085	223,027+	7.16+
June 30, 1911....	3,361,058	247,871+	7.96+
May 31, 1911....	3,113,187	105,617—	3.28—
April 30, 1911...	3,218,704	228,597—	6.63—
March 31, 1911...	3,447,301	46,758+	1.37+
Feb. 28, 1911....	3,400,543	289,624+	9.31+
Jan. 31, 1911....	3,110,919	436,162+	16.30+
Dec. 31, 1910....	2,674,757	85,656—	3.09—
Nov. 30, 1910....	2,760,413	111,536—	3.88—
Oct. 31, 1910....	2,871,949	286,157—	9.12—
Sept. 30, 1910....	3,158,106	379,088—	10.74—
Aug. 31, 1910....	3,537,128	433,803—	10.92—
July 31, 1910....	3,910,931	286,863—	6.72—
June 30, 1910....	4,257,794	.....	.....

Previous to issuing monthly tonnage statements, the Corporation disclosed its unfilled tonnage by quarterly announcements. The low mark shown by such statements was in the quarter ending Sept. 30, 1909, and since that time and up to the beginning of the monthly statements, June 30, 1910, the tonnages were as follows:

June 30, 1910	4,257,794
March 31, 1910	5,403,514
Dec. 31, 1909	5,927,031
Sept. 30, 1909	4,796,833



In New York, the machinery market continues to improve and dealers report a more satisfactory volume of business. The Pennsylvania railroad has placed orders for some machine tools recently and some other railroad interests have been active of late in that market. It is expected that a number of roads will soon put out inquiries for requirements the purchase of which has been deferred for some time. In Pittsburgh, the demand for cranes during the past 30 days was heavier than at any other time in the last two years. At present there is not much business of any kind under active negotiation in the machinery market in Pittsburgh; a large amount of proposed new work, however, will be taken up about the first if the year. In Cleveland, while no large projects are at present before the trade, buying in small lots continues fair. In Detroit, there is a large amount of new construction now being brought to completion and numerous attractive orders have already been placed for the equipment which will be required. In Chicago, the shop strikes on the Illinois Central and Harriman lines are curtailing machine tool purchases by these interests. Manufacturers of electrical and power generating machinery report a good business. The machine tool trade in Chicago is rather slow, although it is showing some improvement this month, compared with October.

Machine Tools

The Hoffmann Allen Co., Buffalo, has placed orders for machine tools aggregating about $6,000, including several lathes, a milling machine, grinder, and a large boring mill.

The board of education, Louisville, Ky., will purchase a lathe for installation in the blacksmithing department of the manual training high school. Sam D. Jones, business director, will receive the bids.

The Lehigh Coal & Navigation Co., Philadelphia, has a list of machinery out amounting to several thousand dollars. Included are a number of machine tools which will be installed at the Lansford, Pa., plant.

The Marine Electric Co., incorporated in Louisville, with $5,000 capital stock, will equip a machine shop for the repair of electrical apparatus. Those interested in the concern are E. C. Thirwell and C. G. Thirwell.

Westcott & Ronnerberg, 189 West Madison street, Chicago, are consulting engineers for an automobile factory to be erected at Hinsdale, Ill. Plans are now in process of preparation and for the present a building, 95 x 102 feet, will be erected. Some machine tools and power transmission machinery will be required.

The Pennsylvania Railroad Co. has bought a number of machine tools recently in the New York market, and the Delaware, Lackawanna & Western has also been more active of late, in purchasing shop equipment, but it is believed that the requirements of those companies far exceed the actual orders placed, and the trade expects a large amount of business from them, and other railroads during the next few months.

Water Works

The Tonopah Mining Co., Tonopah, Nev., will install electrically driven pumps.

Plans have been prepared for a pumping plant to be erected in San Francisco by the American Steel & Wire Co., at a cost of $75,000.

Edgarton, O., is considering the issuance of $30,000 worth of bonds, the proceeds to be used for the installation of a water plant.

Pumping machinery having a capacity of 5,000,000 gallons a day is to be purchased by the city of Columbia, S. C., for installation in the municipal water plant.

Bids will soon be called for by the village of Wilcox, Neb., for the construction of waterworks, from plans prepared by W. E. Donner, engineer, Frohberg building, Grand Island, Neb.

Madisonville, Ky., has decided on a bond issue for water works, and expects to have plans drawn in the immediate future for the construction of a plant at an estimated cost of $75,000.

Ashland, Ky., is considering the issuance of $175,000 worth of bonds, $100,000 of which will be expended in the purchase of the local water plant and the remainder in purchasing equipment for installation in the pumping station.

Bids are being taken by George Gensheimer, secretary of the commission of water works, Erie, Pa., on the installation of a triple expansion crank and fly wheel condensing pump engine with a capacity of 20,000,000 gallons of water daily. Bids will close Dec. 6.

Power Plant Equipment

Batavia, Ill., contemplates making a number of improvements in its municipal electric lighting system.

Manitowoc, Wis., has voted in favor of issuing $40,000 worth of bonds for the installation of an electric light and water plant.

The city council, Sharon, Pa., has appointed a committee to investigate the question of building a municipal electric lighting plant.

Huntington Park, Cal., will vote on a bond issue of $110,000, for municipal water and electric lighting plants on Nov. 28.

The school board of South Bend, Ind., has decided to install an electric generating plant in the new high school building.

Plans are being prepared by the Indiana Woolen Mills, Indiana, Pa., for an addition to its plant which will include extensions to its present power plant.

Martinsville, Ind., has rejected bids for material for the proposed new lighting plant and will probably enter the open market for machinery and other equipment.

Power plant and other equipment will be required for the proposed Henry Watterson hotel, Louisville. Caldwell & Drake, Louisville, have the general contract.

The director of public service, Cleveland, will receive bids until Nov.

28, for one second hand 6.6 ampere, direct current, series arc dynamo, for the municipal electric light plant.

At a special election, the village of Shullsburg, Wis., voted in favor of making a contract with the Interstate Power Co. to establish an electric lighting system.

The Los Angeles aqueduct bureau, H. B. Ferris, secretary, will receive bids up to Nov. 24, for the hydraulic machinery and equipment for the proposed San Francisquito No. 1 power plant.

The Louisville hospital commission will receive bids on Jan. 4, 1912, for the erection of the proposed new municipal hospital buildings. A power plant of considerable capacity will be included. D. X. Murphy & Bro., Louisville, are the architects.

The Central Indiana Water, Light, Heat & Power Co., Francisville, Ind., recently incorporated with $125,000 capital, is reported in the market for material, machinery, etc., for a power and water plant.

The American Railway Supply Co., 24 Park place, New York, has had plans prepared for the erection of a two-story factory building, 51 x 87 feet. It is understood that some power equipment will be required for same.

R. A. Mitchell, president of the Alabama Power Co., is planning to erect a hydro-electric plant which the company is to erect on the Little river near Talledega, Ala. Mr. Mitchell's office is located at Gadsden, Ala.

Contracts are being awarded by the Pennsylvania Coal & Coke Co. at Patton station, near Johnstown, Pa., for a motor barn, 35 x 75 feet; blacksmith shop, 50 x 100 feet, a warehouse and office building and two sub-stations.

George, Melvin and James Miller, of Eugene, Ore., and Joaquin and Jaunita Miller, of Oakland, Cal., are the members of a corporation which has been organized to erect and maintain a large power plant which will supply electricity to several towns on the Siuslaw river in southern Oregon.

Larrimore V. Sweezy, architect, 185 Madison avenue, New York, has prepared plans for a 2-story brick laundry building at 427-429 East Thirteenth street. The building is estimated to cost $20,000 and will be equipped with power and heating apparatus.

The Des Moines Power Co. has purchased the plant of the Oskaloosa Traction & Light Co. and the Oskaloosa & Buxton Electric railway, Oskaloosa, Ia., and is considering the erection of a dam and power plant capable of developing 12,000 horsepower, about eight miles below the city.

Lester Fitch and Joseph McElvain, proprietors of the water and light plant at Tracy, Minn., contemplate the purchase of an eight-horsepower, alternating current motor to drive a pump now steam driven and also are considering the installation of an electrically driven, triplex pump with a capacity of 2,000 gallons per minute.

Power machinery dealers are anticipating the distribution of specifications on the electric lighting and power plant for the Woolworth building at Broadway, Park Place and Barclay street, New York, in the near future. This plant will be the largest of its kind in the city, requiring about 1,500 kilowatt capacity.

D. Auerbach & Sons, 334 West Thirty-ninth street, New York, have had plans prepared and filed at the building department for an 11-story candy factory. The building will occupy the entire block front between Forty-sixth and Forty-seventh streets on Eleventh avenue, and will cost about $750,000. R. D. Kohn, architect, prepared the plans.

The Knoxville Power & Light Co., Knoxville, Tenn., has been incorporated with $500,000 capital stock by T. Asbury Wright, R. M. Jones, E. G. Oates and others. It will build a substation for handling current from a hydro-electric plant in that section of Tennessee, and will supply the community with current under a franchise recently issued to the Eastern Tennessee Power Co., with which it will be associated.

The Bradley Construction Co., New York, is progressing rapidly with the compressed air plant at Ninety-sixth street and the East river. When completed, eight large compressors will be in use at the plant, supplying power for work on the New York subway extensions. They will all be electrically-driven machines. The company will require a similar plant somewhere downtown for serving the lower sections of the subway construction work, but the definite location has not been made known.

New Construction

The Union Spring & Mfg. Co. is building a 40 x 60-foot extension to its foundry at New Kensington, Pa.

The Landis Tool Co., Waynesboro, Pa., is erecting a pattern house 40 x 228 feet.

The White Co., Cleveland, is erecting a one-story building, 60 x 200 feet, to be used as a shipping room.

It is reported that the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., will build an erecting shop.

The Chicago Railways Co. is building a small machine shop and store room, 50 x 65 feet, at 2513 Armitage avenue, Chicago.

The Pere Marquette railway has let a contract for building a woodworking shop, 80 x 150 feet, at Saginaw, Mich.

The Lorain Steel Co. is preparing plans for a one-story brick and steel pattern storage building to be added to its plant at Johnstown, Pa.

The Adams-Bagnall Electric Co., Cleveland, has awarded a contract for 15 electric motors to the Wagner Electric Mfg. Co., St. Louis.

The Appomattox Iron & Supply Co., Petersburg, Va., contemplates erecting a new machine shop, 50 x 222 feet.

Meese & Godfried, machinery dealers, San Francisco, are preparing to erect a large one-story warehouse to cost $25,000.

The Brisco Iron Works, Porterville, Cal., will erect a plant at that place for the manufacture of deep well pumps. A foundry will also be operated.

The Union Iron Works, San Francisco, has let a contract for the construction of several new buildings to take the place of structures now in use.

Contracts have been closed for the erection of a plant at Portland, Ore., for the Berlin Machine Works, of Berlin, Wis. All machinery will be motor driven.

The director of public safety, Cleveland, will receive bids until Nov. 27 for constructing an engine room, boiler room and machine shop at the Cleveland Boys' Home.

The National Tool Co., Cleveland, is erecting a 30 x 150-foot addition, three stories high, which will be used for manufacturing milling cutters. It will cost about $15,000.

The F. B. Stearns Co., Cleveland, has let a contract for the erection of a four-story machine shop, 50 x 200 feet. The foundations are now being built.

C. S. Smith, Pittsburgh, has received a contract for erecting a one-story office building for the Consolidated Expanded Metal Co., Pittsburgh.

A new plant for the manufacture of wire weaving machinery will be located at Menominee, Mich. The building now in progress will be of concrete and steel and 60 x 200 feet in

dimensions. J. W. Wells and M. B. Lloyd are the promoters of the enterprise.

The International Harvester Co. has purchased a large site in North Lethbridge, Alta., for the erection of a warehouse. A spur track connecting the property with the railway will be put in this winter.

The Southern Mfg. Co., Gadsden, Ala., whose plant was badly damaged by fire earlier in the year, has begun the erection of a new plant which is hoped will be completed shortly after Jan. 1.

The Hamilton Mfg. Co., Two Rivers, Wis., manufacturing steel and wood type cabinets, etc., has decided to erect a large addition next spring to be devoted exclusively to the production of sheet metal cabinets and steel office furniture.

The Hauser Mfg. Co., Louisville, Ky., expects to enlarge its plant early in 1912, when it will lease a new building for its work. It manufactures dental supplies. The concern recently installed a complete nickel-plating plant.

H. J. Hayes and E. D. Emmons of the Hayes Mfg. Co., Detroit, were in Indianapolis a few days ago looking for a site for a factory. The company manufactures a large line of automobile parts and has decided that a factory in Indianapolis would be desirable. It is understood the present factory in Detroit will be continued.

James L. Stuart, Pittsburgh, who has the general contract for the erection of an addition to the University of Pittsburgh buildings, has awarded sub-contracts as follows: Structural steel, the John Eichleay Jr. Co.; roofing steel to the Pittsburgh Clay Products Co.; sheet metal work to the Berritt Iron & Roofing Co., Wilkinsburg, and ornamental iron work to Winslow Bros., Pittsburgh.

The Beaver Dam Foundry Co., Beaver Dam, Wis., has decided to make numerous extensions. The main improvement will be the construction of a new core room, 40 x 40 feet, of concrete construction. It will be equipped with a new truck core oven and two small cranes. The company will need equipment for handling castings up to 2,000 pounds in weight.

The New York Dock Co., 8 Bridge street, New York, has begun the construction of two large factory buildings at the foot of Commerce street, Brooklyn, N. Y. Maynicke & Franke, architects, 25 East Twenty-sixth street, prepared the plans. The buildings will cost about $1,000,000. They will be 80 x 450 feet, each, five stories, of reinforced concrete.

The American Blower Co., Detroit, will erect a plant in Canada on a site of 4½ acres on the Essex Terminal railway at Windsor, Ont. An erecting shop will be built, 50 x 200 feet, of steel and concrete construction. A foundry will also be added, work on which will be commenced in the spring. The Canadian Sirocco Co. will manufacture a full line of the American Blower Co.'s products, consisting of fans, blowers, heating, ventilating and drying apparatus, steam engines, steam traps, etc.

The Crawford Locomotive & Car Co., Streator, Ill., recently received a large contract from the Detroit, Toledo & Ironton Railway Co. for reinforcing and repairing a large amount of freight equipment. The cars to be repaired will be shipped from the Detroit, Toledo & Ironton terminal at Leipsic, O. The Crawford Locomotive & Car Co. is making extensive additions and improvements to its plant and builds all kinds of freight cars, steel underframes, etc., in addition to its car repair work.

The Atlas Gas Engine Co., Oakland, Cal., has purchased a large tract at the foot of Twentieth avenue and has started work on a new factory. The main building will be 80 x 200 feet, while out-buildings, 40 x 80 feet, will flank it. A large water plant for fire protection will also be built.

The Brillion Iron Works, Brillion, Wis., manufacturing gasoline engines, implements, etc., and operating a foundry, is erecting a new shop building, 60 x 120 feet, with a wing, 30 x 50 feet, of concrete and steel construction. The present main building, 70 x 80 feet, will be used as a machine shop.

The B. F. Board Motor Truck Co., Alexandria, Va., advises that it is planning to erect an additional building which will increase the capacity of the plant from 200 to 400 trucks per year. This company was recently incorporated with $100,000 capital. Its sales representatives already appointed are the Board Motor Truck Co. of Massachusetts, in the New England states, and Van Tassell & Kearney, in New York and its vicinity. The officers of the B. F. Board Motor Truck Co. are: President, B. F. Board; vice president, T. C. Smith; treasurer, W. E. Bain; secretary, G. S. Hinkins. The company advises that it will be in need of lathes, drill presses, shapers and blacksmith equipment for its proposed addition.

Government News

Canal circular 661, previously announced, under which bids will be opened Dec. 30, calls for proposals on 22 spillway gate machines, complete, except motor, limit switch, counterweight base and blocks, wrenches, wrench board, and hand-operating mechanism; also spare parts. Class 2 calls for three vertical centrifugal pumps with motors rigidly connected.

Canal circular 662, the issue of which has been heretofore announced in these columns, calls for bids, to be opened Nov. 22, for the furnishing, delivered at the isthmus, of the following machinery:

Four locomotive cranes, 15-ton.
One to six auxiliary hooks and lines.
Four stiff-leg derricks, 11-ton.
Four hoisting engines for above derricks.

The bureau of supplies and accounts, navy department, Washington, D. C., has awarded a contract for furnishing one motor driven engine lathe, for delivery at New York, to the Niles-Bement-Pond Co., for $13,160.

The bureau of supplies and accounts, navy department, will receive bids, to be opened Dec. 12, for furnishing materials and supplies, to be delivered at the naval stations named, in accordance with the schedules enumerated, as follows:

Electric traveling crane, 1, Mare Island, 4071.
Furnaces, oil burning, portable, 2, Puget Sound, 4073.
Truck, electric motor, 1, Puget Sound, 4072.
Crane, traveling, one, Pearl Harbor, H. I., 4082.
Condenser, surface, 1, Charleston, 4083.
Machine, milling, universal, one, Portsmouth, N. H., 4103.
Transformers and spark gaps, 8 each, Brooklyn, 4084.

The bureau of supplies and accounts, navy department, has given contracts to various bidders under proposals opened on the days named, in accordance with the schedules enumerated for delivery at the station indicated as follows:

Opening Sept. 12.

Schedule 3853, class 92, Washington, D. C., 1 power press, Ferracute Machinery Co., Bridgeton, N. J., $6,950.

Opening Sept. 26.

Schedule 3895, class 21, Philadelphia, 1 universal double circular saw, Chicago Machinery Exchange, $578.

Opening Oct. 3.

Schedule 3930, class 73, Brooklyn, 2 triple-plunger electric pumps, each with 120 volt 3-horsepower motor, and two electric centrifugal flushing pumps, each with 120 volt, 12-horsepower direct-connected motors, controlling appliance and spare parts, Gould Mfg. Co., New York, $3,270.

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The following manufacturing companies have filed articles of incorporation:

Joliet Forge Co., Joliet, Ill.; $30,000; by John J. Sharpe, W. H. William Sharpe and Edward F. Sharpe.

Roth Tool Co., St. Louis; $20,000; by John O. Wilson, Edward W. Roth and Edward B. Roth.

Western Galvanizing Co., Kansas City, Mo.; $10,000; by Thomas G. Gaines, Edward T. Martin and Edward R. Martin.

Rukes Steel Barrel & Welding Co., Kansas City, Mo.; $15,000; by Charles F. Rukes, Walter J. Scafe and Gustav Geis.

Riverside Malleable Iron & Steel Works, Inc.; $150,000; by G. B. Smallcomb, F. W. McKown, Pittston, Pa.; M. G. Ryan, Philadelphia.

The Moore Continuous Safety Rail Co., Galesburg, Ill.; $20,000; by R. D. Moore, Lake W. Sanborn, E. R. Drake, W. E. Doyle and R. C. Rice.

The Deft Adding Machine Co., Kansas City, Mo.; $50,000; by W. C. Renfrow, L. A. Robertson and Hennie B. Renfrow.

The American Mfg. Co., Arizona, Ind.; $180,000; to manufacture concrete machinery; by President, J. H. Wiest.

The Laporte Radiator Co., Laporte, Ind.; $100,000; to manufacture radiators, etc.; by Emmet Scott, A. J. Rumely and Vance Wilkins.

The Burkett Lightning Rod Co., Fremont, O.; $20,000; to manufacture lightning rods; by W. S. Burkett, O. J. Burkett, O. V. Burkett, etc.

The Modern Specialties Mfg. Co., Goshen, Ind.; $25,000; to manufacture machinery; by C. C. Tiedemann, John Winter, E. E. Ash and J. A. Snapp.

The Tuber Mfg. Co., Barberton, O.; $10,000; to manufacture farming machinery; by Jerome Snyder, John H. Swisher, J. C. Burtner, etc.

The Farmers Peat Fuel Machine Co., Indianapolis; $75,000; to manufacture peat-pressing machinery; by R. S. Lawrence, P. A. Lavallee and C. B. Marshall.

Woodward-Wanger Co., Philadelphia; $50,000; to manufacture brass goods and machinery; by treasurer, Geo. W. F. Keys, 1829 Pacific street, Philadelphia.

Pick Hardware Co., Warren, Pa.; $100,000; to manufacture iron and steel furnaces, iron vats, etc.; by treasurer, Louis Brown, 215 Water street, Pittsburgh.

The Hand Vacuum Sweeper Co., Pittsburgh; $10,000; to manufacture cleaners and sweepers; by treasurer, Henry J. Thomas, 7211 Upland street, Pittsburgh.

The Universal Cutting Machine Co., Cincinnati; $15,000; to manufacture various cutting machines; by Victor E. Jullien, Albert J. Ryan, H. T. McNaughton, etc.

The Atlanta Mfg. Co., Atlanta, Ga.; $100,000; to manufacture a general line of mill equipment and supplies; by J. O. Bailey, J. E. Boston and A. D. Kennedy.

The Michigan Auto Joint Co., Grand Rapids, Mich.; $10,000; to manufacture universal joints and automobile accessories; by C. E. Perkins, F. Carter, etc.

The Newark Auto Accessory Mfg. Co., Newark, N. J.; $100,000; to manufacture auto accessories; by Philip Laible, Henry Eisenlohr, Samuel J. MacDonald and others.

The Dunlap Mfg. Co., Columbus, O.; $50,000; to manufacture pneumatic tools; by S. M. Dunlap, A. I. Schetenstein, T. C. Dunlap, L. F. Sater and B. G. Watson.

The Bliss Sanitary Garbage Can Co., Grabill, Allen county, Ind.; $40,000; to manufacture garbage cans; by John Haifley, J. B. Henry, Joseph Wittmer, C. A. Bliss and others.

The Xcelda Specialties Co., Cleveland; $15,000; to manufacture and deal in hardware specialties; by Harry E. Davis, W. H. Hasselman, Joseph A. Shipley, etc.

The International Motor Service Association, New York; $100,000; to manufacture automobiles, motor vehicles, etc.; by Wm. H. Brearley, W. W. Friend, of 25 Broad street, etc.

The Modern Vending Machine Co., New York; $80,000; to manufacture vending machines, etc.; by Jas. D. Ferris, 306 West Fourth street; M. A. Lesser, 302 Broadway, etc.

The Buckeye Implement & Supply Co., Cleveland; $10,000; to manufacture and repair farm implements, hardware and supplies; by C. R. Cross, E. C. Mullen, M. A. Rusch, etc.

The Standard Scale & Equipment Co., New Haven, Conn.; $10,000; to make and deal in scales, trucks, etc.; by J. Hypkin Brown, Thomas Eden and Charles W. Allen, all of Bridgeport.

The Haney Fire Apparatus Co., San Francisco; $2,000,000; to manufacture the Haney fire fighting elevator; by directors, E. H. Haney, George K. Haney, Michael McCann and others.

The General Automatic Co., Syracuse, N. Y.; $250,000; to manufacture and sell cash registers and cash-assorting machines; by directors, Cecil B. Cory, Edward J. Richardson, Warren S. Barlow, etc.

The Brooks-Kleinschmidt Typewriter Co., New York; $50,000; to manufacture typewriters, telegraph instruments, etc.; by Byron Brooks, 111 Broadway; Edward Kleinschmidt, 231 Greenwich street, etc.

Toledo Metal Spinning Co., Toledo, O.; $10,000; to deal in metals and conduct a general machine shop; by George H. Lober, Walter R. Ewing, Charles E. Holt, Robert H. Feldtman and Mary Constance Lober.

The Evans Fitting Co., Camden, N. J.; $50,000; to manufacture steel fittings for hydraulic and other piping; by F. R. Hansell, John A. MacPeak, I. C. Clow, all of Camden, N. J.

The Mayor Tank Mfg. Co., Brooklyn; $10,000; to manufacture tanks, vats, etc., for breweries, tanneries, etc.; by Christian Mayer, 116 Richard avenue, Glendale, N. Y.; Carl Ebert, 1526 Gates avenue; Patrick Condon, 101 Nassau avenue, Brooklyn.

The Gibbs Gas Engine Co., Jacksonville, Fla.; $25,000; to manufacture Gibbs marine engines, deal in machinery and specialize in machine shop work; by president, Geo. W. Gibbs Jr.; vice president, Jos. D. Weed; secretary and treasurer, H. W. Mizell.

Knox Mfg. Co., Philadelphia; $5,000; to manufacture iron, steel, brass,

bronze, copper. lead and other metals, tools, machinery, etc.; by F. D. Stovell, 408 South Eighteenth street, Philadelphia; H. W. Goodall, Alden, Pa.; William S. Feeny, 1222 Airdrie street, Philadelphia.

Torbensen Gear & Axle Co., Bloomfield, N. J.; $120,000; to manufacture gears, axles, etc.; by Jos. O. Eaton, 167 Upper Mountain avenue, Henning O. Taube, 67 Highland avenue, Montclair; Viggo V. Torbensen, 40 Hazelwood place, Bloomfield, N. J.

Strause Gas Iron Co., Philadelphia; $100,000; to buy, sell and deal in gas irons and gas fixtures, and manufacture the same; by Louis J. Strause, 810 North Broad street, Philadelphia; Harry Strause, Broad and Fairmont avenue, Philadelphia; Max Heller, 3228 Clifford street, Philadelphia; Charles W. Fellows, 5313 Chestnut street, Philadelphia.

General Industrial

Kokomo Brass Works, Kokomo, Ind., filed increase of capital from $50,000 to $100,000.

R. M. Babbitt Brass Foundry Co., Chicago, has filed notice dissolving the corporation.

The loss by fire recently sustained by the Clinton Bridge & Iron Works, Clinton, Ia., has been settled on the basis of $10,000.

The De Bats Crucible Steel Co., Zelienople, Pa., has been granted a West Virginia charter. The company will have a capitalization of $125,000.

The Zug Iron & Steel Co., Pittsburgh, has sold to the Mackintosh, Hemphill & Co., 50 x 50 feet of land at Etna and Thirteenth streets, Pittsburgh, for $20,000.

The Thermodyne Engine Co., New York, whose incorporation was recently noted, advises that it will manufacture a commercial sized engine, covered by patents for an entirely new cycle of power.

Application will be made Nov. 13 for a Pennsylvania charter for the Verona Steel Castings Co., Pittsburgh, which will manufacture castings and forgings of iron and steel and other metals.

The Positive Cluch & Pulley Works, Lansing street, Buffalo, has purchased a site of five acres on Military road bounded by the New York Central railroad, Toisul street and Military road.

The Fuller Submarine Torpedo Boat Co. has been incorporated at San Francisco with a capital stock of $5,000,000 to manufacture submarine fighting vessels. The directors are: J. E. Bennett, W. M. Smith, N. M. Twomey, E. Michel and E. J. Bennett.

The Little Motor Car Co., Flint, Mich., has been incorporated with a capital stock of $1,200,000, to manufacture automobiles, and will take over the plant of the Flint Wagon Works at that place. The incorporators are: W. H. Little, C. M. Begole and W. S. Ballenger.

The Kentucky Wagon Mfg. Co., Louisville, has purchased the plant of the Electric Vehicle Co., at Preston and College streets, that city, which recently began the manufacture of a light delivery truck. The plant will be operated by its new owners.

The county court at Kenosha, Wis., has issued an order granting permission for the reorganization of the Windsor Spring Co. under a creditors' committee, with a view to conserving the estate of the late Benjamin F. Windsor, sole owner of the company.

Feed grinding machinery will be manufactured by the Letz Mfg. Co., which has been organized and incorporated at Crown Point, Ind., with an authorized capitalization of $20,000. Those interested in the company are George H. Letz, J. H. Letz and E. H. Letz, all of Crown Point.

The Dominion Iron Works, Bristol, Tenn., has been reorganized with H. P. Wyman as president. Other officers have not been changed. The company has increased its capital stock from $100,000 to $150,000, for the purpose of manufacturing stoves, ranges and heaters on a more extensive scale.

The plant of the old B. Roth Tool Co., 2122 Chouteau avenue, St. Louis, which was sold under a mortgage foreclosure for $20,000 held by the Franklin Bank, has been bought back by the Roth Tool Co., a new corporation, with a capital stock of $20,000. The new company has opened the plant and will operate it. Edward B. Roth is president of the reorganized concern.

The Hoosier Sales Co., Jamestown, N. Y., whose incorporation was recently noted, advises that it will market the Nelson system, which is a single unit electric lighting plant, now being manufactured by the Greenville Metal Products Co., Greenville, Pa., which has a capacity of 10,000 units per year. The officers of the Hoosier company are: President, Benjamin S. Dean; secretary and treasurer, Frank L. Wayman.

The Continuous Frog & Crossing Co., Syndicate Trust building, St. Louis, is exploiting the Roach frog, which is a complete structure within itself and which does not require guard rails. It is designed to cause a smooth, continuous track surface and to eliminate the impact to the train and road bed as in the case in the frogs in use on most of the railroads today. This new device is being tried by several large railroads in different parts of the country.

The Monarch Metal Weather Strip Co. has purchased ground on the north side of Forest Park boulevard, St. Louis, and will build a plant for the manufacture of zinc, copper and bronze weather strips. The new plant probably will be in operation after Jan. 1. The old shop is now at 3949 Forest Park boulevard. The company was started about four years ago by St. Louis capital and has these officers: President, Alfred M. Lane; vice president, George O. Carpenter Jr., and secretary, Oscar W. Hoopaw.

William P. Wink, of Anderson, Ind., who holds $2,000 worth of stock in the concern, has filed suit asking a receiver for the American Roller Screen & Stamping Co., of Greenfield, Ind. About one year ago $12,000 worth of stock was subscribed to induce the company, which had a factory at Hammond, to move to Greenfield. Of this amount, $2,700 was paid in, and although the machinery was placed in the Greenfield plant, the factory was never operated.

Trade Notes

The Puxico Iron Co. has opened an office in the Times building, St. Louis, with C. J. Crawford, president of the company, in charge.

The general offices and the principal manufacturing departments of the Lavingue Gear Co. have been transferred from Detroit to Milwaukee.

Fires

The stove foundry of the Stratton & Terstegge Co., Louisville, was practically destroyed by fire last week. The loss will be about $5,000.

The Joliet Bridge & Iron Works, Joliet, Ill., sustained a $20,000 loss by fire, Nov. 1. Both buildings and machinery were damaged.

Fire recently caused a loss of $25,000 to the machine and blacksmith shops of the Lowmoor Iron Co.'s plant at Lowmoor, Va.

The foundry of the Henry Vogt Machine Co., at Tenth and Ormsby streets, Louisville, was damaged to the extent of $5,000 during the past week from a fire that originated from a cupola.